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MOTOR AGE

Volume XXXV
Number 3

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, JANUARY 16, 1919

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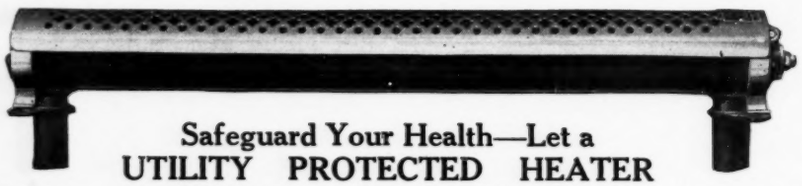

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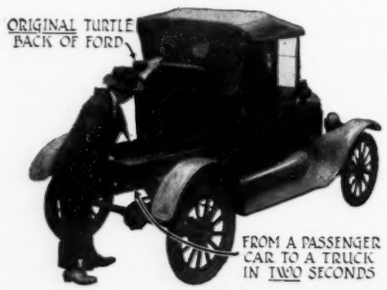

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MOTOR AGE

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MOTOR AGE

Standardized Traffic Regulations

Highways Transport Committee Sponsers Move to Have Uniform Requirements—Advances Eno System Endorsed by Motor Age

THE Highways Transport Committee has taken up the question of highway traffic regulations. It considers such regulations part of the broad subject of highway transport. This is in line with what MOTOR AGE has been advocating for years. MOTOR AGE also advanced the system formulated by William Phelps Eno as embodying sane and constructive principles upon which the regulations adopted by a city would be based.

Uniform traffic regulations are a matter for close consideration and support by dealers and trade organizations throughout the country. Lack of uniform regulations is no mean stumbling block in the path of the dealer. The confusing difference in the parking rules for a city and for the neighboring city, both of which it is probable a car owner may have occasion to visit in the course of a day, makes a man a lawbreaker unwillingly, unconsciously, and with unnecessary ignorance of the law that excuses no man. This is only an example. The complexity of the traffic regulations in one city alone may prevent a man from owning a car, when he otherwise might, owing to his hesitancy in incurring the attendant traffic troubles.

Standardization the Solution

Standardization of traffic rules is the solution. Just as standardization of trucks, tires, etc., has brought about better conditions in the industry as a whole, so standardized traffic regulations will bring about better motoring conditions throughout the country

Like MOTOR AGE, the Highways Transport Committee is endorsing the Eno system. Mr. Eno is chairman of the District of Columbia highways transport committee. He is not only recognized by authorities in many countries as eminently qualified to present a detailed traffic program, but distinct recognition has been given to his advanced views on this subject in the adoption by the authorities of Paris of his highway traffic regulations. London now is compiling regulations in conformity with them. Mr. Eno was active in connection with the organization of the first traffic squad in New York and instrumental in bringing about its traffic regulations.

While the regulations reproduced here are offered as a standard, they are open to suggestions from outside as to how they can be made clearer, shorter or in any way more effective. What Mr. Eno has to say about traffic regulations in general follows:

What Eno Has to Say About Traffic Regulations

THE education of drivers and pedestrians is the keynote to effective and economical traffic regulations.

Wherever brief, clear and reasonable regulations have been sufficiently distributed, traffic has been easily handled. On the contrary, where this has not been the case, proper regulation has been practically impossible.

Standard Highway Traffic Act

To obtain the best results, I believe, we must eventually have a Federal traffic act, although the same object can be accomplished slowly by one state enacting a scientific traffic act and other states following until our aim, uniformity, has been attained.

If, however, the United States government would pass a Federal traffic act, results could be obtained much more expeditiously. The act should apply to the District of Columbia, to the territories and to all post roads. It would become, then, without interfering with state rights, national, since no vehicle could travel on a post road which did not comply with the Federal act.

The act should contain the general highways traffic regulations similar to those given, with amplifications, when necessary, of some of the provisions, as for instance, that on signals, which should be more explicit in the act than required in the brief regulations. The act also should contain concisely all necessary conditions in regard to the use, construction, dimensions, equipment and registration of vehicles and in regard to examinations, permits and licenses of drivers, etc.

All should be comprehensive but concise, superseding existing laws and conflicting ordinances.

General Traffic Regulations Ready

Traffic regulations must be brief or they will not be read; clear or they will not be understood; reasonable or they will not be obeyed; uniform or they will result in confusion and danger, which, with the ever-increasing travel between towns, states and countries, is of the utmost importance.

The New York regulations have been developed to approximate perfection by many years of actual trial. They date officially

from Oct. 30, 1903, and each revision has shown progressive improvement. These regulations were given official standing in Paris July 10, 1912.

London also is using them in working out her regulations in process of compilation, so that the New York police traffic regulations are practically those of London and Paris, as well as of many cities in the United States. They contain everything essential for the largest city and nothing superfluous for the smallest village. In their present revised form they are ready for standardization.

To preserve uniformity it is necessary that no changes be made by unauthorized persons or committees. To avoid this, each state, through its motor vehicle commissioner or a state highway traffic regulation commission, appointed for the purpose, should suggest changes when thought necessary, and send delegates to a national highway traffic regulation commission appointed by the President of the United States with power limited entirely to the adoption or rejection of such suggested changes.

Until a Federal traffic act can be enacted it would be well for all cities and towns to revoke existing ordinances on traffic and in their place pass the following simply worded provision:

> The police department, or in a town which has no police department, the board of selectmen, town manager or other proper authorities are hereby authorized, empowered and ordered: To adopt and enforce the standard highway traffic regulations and to direct, control and regulate and, when necessary, divert or exclude in the interest of public safety, health and convenience, the movement of pedestrian, animal and vehicular traffic, of every kind on highways, in parks and on bridges.

The regulations, in folder form, should be obtainable at police stations and be distributed to transportation companies, besides being in the pockets of policemen to be given to anyone disregarding any provision, the officer calling attention to the particular article and section violated and marking it with a cross.

Besides the folders, placards of the regulations should be affixed in all public stables and garages and other suitable places.

Realizing the value of traffic regulations such as is in force in New York City, many other cities delegated individuals or committees to formulate regulations. Usually these were unwisely put in the form of an ordinance instead of police regulations. Those to whom this task was delegated, with few exceptions, not content to profit by experience appear to have been actuated by a desire to originate and satisfy a pride of authorship.

The result is that, while almost everything of value has been culled from the New York regulations, they have been so confused by rearrangement and rewording and by unimportant interpolations and important omissions that they are not only non-uniform but confusing and much too long, the set for one unfortunate city, for example, containing over 6500 words, lacking both sequence and order.

The study of traffic regulation with a view to further improvements should be encouraged but under no circumstances to the extent of allowing inexperienced persons to disarrange and confuse thoroughly tested regulations.

The regulation of highway traffic has grown to be almost an exact science, and as such, the knowledge as to what should be left out is as important as what should be put in.

The Standardized Traffic Regulations

DEFINITIONS

A—Highway, public space intended for vehicular and pedestrian traffic.

B—Street, that part of a highway intended for vehicles.

C—Sidewalk, that part of a highway intended for pedestrians.

D—Crosswalk, that part of a street, whether marked or understood, upon which pedestrians should cross.

E—Curb, the edge of a street, whether marked or understood.

F—One-way traffic street, a street upon which traffic is restricted in one direction.

G—Horse, any animal used as a conveyance.

H—Vehicle, any conveyance, with the exception that skaters, baby carriages and invalid's chairs shall be considered as vehicles only when on the street but as pedestrians when on crosswalks or sidewalks.

I—Streetcar, any conveyance confined to tracks.

J—Driver, a person who is in control of a vehicle on a highway.

K—To rank, to stand vehicles one behind another parallel to the curb.

L—To park, to stand vehicles alongside another at an angle to the curb.

M—Limit lines, lines on pavement defining ranking or parking spaces, safety, danger or neutral zones and crosswalks.

Careless walking must be avoided and consists in failure by pedestrians to observe the following directions to insure their own safety and to avoid unnecessary interference with the movement of other pedestrians and vehicles.

1—Always keep to the right on sidewalk, crosswalk and street.

2—Keep off street except when necessary to cross.

3—Cross street at a right angle and, if possible, on a crosswalk.

4—Watch for traffic officer's signal.

5—Stand on sidewalk or within safety-car-stop-zone while waiting for a street car.

6—Stand still on alighting from a streetcar and observe traffic before moving.

7—When necessary to pass behind streetcar watch out for traffic in opposite direction.

8—Lean and step toward front of streetcar when alighting.

9—Enter and leave safety-car-stop-zone at crosswalk.

10—Do not stand in middle of a sidewalk but on one side and out of way of others.

11—Do not loiter on crosswalks or before public entrances.

12—Use right-hand sidewalk in narrow streets and during congested hours.

13—Do not walk more than three abreast.

14—Skaters, baby carriages and invalid's chairs must conform to regulations for VEHICLES when on the street and observe directions for PEDESTRIANS when on a sidewalk or crosswalk.

The following regulations for vehicles shall be observed by the drivers thereof, who shall comply at all times with any order by voice, hand or whistle from the police as to starting, stopping, slowing, approaching or departing from any place, the manner of taking up or setting down passengers and the loading or unloading of anything.

The police may divert vehicular or pedestrian traffic to avoid congestion or promote safety and convenience.

ARTICLE I—RECKLESS DRIVING IS PROHIBITED AND CONSISTS IN

Sec. 1—Driving any vehicle when not legally qualified to do so, when under the influence of liquor or when for any other reason not competent to drive properly.

Sec. 2—Driving any vehicle when it is not under absolute control at crosswalks, street intersections and junctions.

Sec. 3—Failing to exercise due care in crossing or joining in with the traffic of another street, bearing in mind that it is important to interrupt the traffic of an important thoroughfare as little as possible.

Sec. 4—Exceeding a reasonable, considerate and safe speed rate under conditions existing or the speed rate established by law.

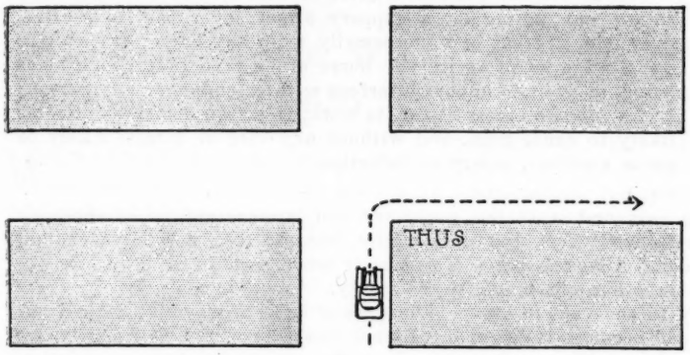
Sec. 5—Violating any article or section of the following regulations so as to cause danger, or failing to observe every reasonable precaution for safety or any direction specified on any sign placed by competent authority.

ARTICLE II—PASSING, TURNING, KEEPING TO THE RIGHT, BACKING AND FOLLOWING

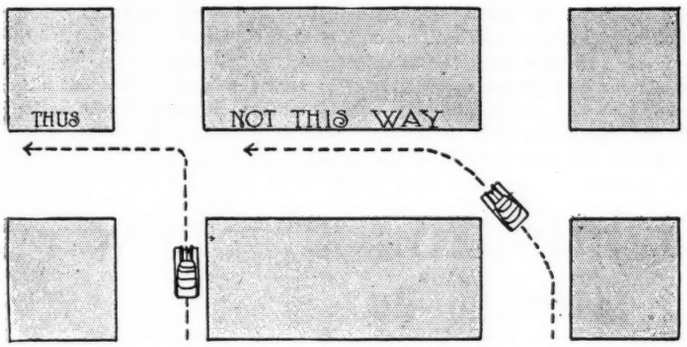
Sec. 1—A vehicle meeting another shall pass to the right.

Sec. 2—A vehicle overtaking another shall pass to the left and not pull over to the right until entirely clear of it; except in overtaking a street car when it shall pass to the right if space permits.

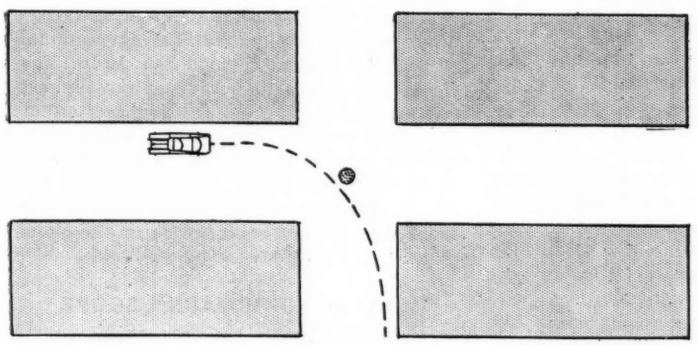
Sec. 3—A vehicle turning into a street to the right shall keep close to the right-hand curb.



Sec. 4—A vehicle turning into another street to the left shall pass around the central point of intersection of the two streets,



except, if directed by the traffic officer, it shall pass in front of and close to, instead of around, the central point of intersection, and it may do so also if its turning radius will not permit its going around the central point of intersection without backing, providing it slows down or stops and signals effectively.



Sec. 5—A vehicle shall keep as near as practicable to the right hand curb so as to leave the center of the street clear for overtaking traffic.—the slower the speed the nearer the curb.

Sec. 6—A vehicle on a street divided longitudinally by a parkway, walk, sunkenway, viaduct, isle of safety, or cab stand shall keep to the right of such division.

Sec. 7—A vehicle passing around a circle shall keep to the right from entrance to exit.

Sec. 8—A vehicle shall not back to make a turn if to do so will obstruct traffic but shall go around the block or to a street wide and clear enough for the purpose.

Sec. 9—A vehicle shall not follow another too closely for safety.

ARTICLE III—STOPPING, RANKING, PARKING AND WAITING

Sec. 1—A vehicle shall not stop with its left side to the curb except on a one-way traffic street.

Sec. 2—A vehicle waiting in front of an entrance to a building or a public transportation line shall promptly give way to an arriving vehicle.

Sec. 3—A vehicle shall neither rank nor park so as to prevent the free passage of other vehicles in both directions at the same time or in one direction in a one-way traffic street.

Sec. 4—A vehicle shall neither rank nor park with any part of it or of its load extending beyond limit lines on street, nor within 10 ft. of a fire hydrant.

Sec. 5—A vehicle, when another vehicle is waiting to take its place, shall not remain in front of the entrance to a building, except while expeditiously loading or unloading, and, if horse-drawn and with four wheels, the horses shall stand parallel with the curb, faced in the direction of traffic.

Sec. 6—A vehicle, unless it be a streetcar, shall not stop except near the curb; neither shall it obstruct a street intersection or a crosswalk except to allow another vehicle or pedestrian to cross its path.

Sec. 7—A streetcar shall not stop within a street intersection nor upon a crosswalk nor within 5 ft. of a streetcar ahead.

Sec. 8—A vehicle shall not so occupy any street as to obstruct traffic.

ARTICLE IV—OVERTAKING STREET CARS

(Where no car-stop-safety-zone or platform is provided)

A vehicle overtaking a streetcar, stopped to take up or set down passengers, shall stop or pass very slowly, carefully and considerately, not approaching the step of said car nearer than 5 ft. in any direction.

ARTICLE V—RIGHT OF WAY

Sec. 1—A vehicle shall facilitate the right-of-way of fire, police department and emergency repair vehicles of public service corporations and ambulances when in performance of duty but this shall not relieve these vehicles from consequences of carelessness.

Sec. 2—A vehicle in front of a street car upon signal shall immediately get off the track.

Sec. 3—A vehicle, on the approach of fire apparatus, shall move out of its way or stop so as not to interfere with its passage.

ARTICLE VI—SIGNALS

Sec. 1—When slowing or stopping give timely signal by hand or in some other unmistakable manner.

Sec. 2—When about to turn, either from a standstill or while in motion, give timely signal, by hand or in some other unmistakable manner, to indicate the direction of the turn. This is especially important when turning to the left.

Sec. 3—Before backing observe the approach of traffic and give ample warning.

Sec. 4—Police whistle signals shall indicate:

One blast—North and South traffic stops and East and West proceeds.

Two blasts—East and West traffic stops and North and South proceeds.

Three or more blasts—The approach of fire apparatus or other danger.

Sec. 5—Vehicles must be equipped with lights and sound signals as prescribed by law but sound signals shall not be used except for necessary warning.

ARTICLE VII—RESTRICTIONS IN REGARD TO VEHICLES

Sec. 1—A vehicle's use is prohibited when it is so constructed, inclosed, equipped or loaded as to be dangerous, retard traffic or prevent the driver from having a view sufficient for safety, or when it is so loaded with iron or other material as to create loud noises while in transit, or when it is loaded with any material extending beyond its rear without being provided with a red flag by day and a red light at night on the end of the load.

Sec. 2—A vehicle unless confined to tracks shall not tow more than one other vehicle and the tow line or pole shall not be longer than 16 ft.

Sec. 3—A motor vehicle left standing, without operator in charge, shall have its motor stopped and efficiently locked, its emergency brake set and if on a hill, its wheels turned toward the curb.

Sec. 4—No one less than sixteen years of age shall drive a vehicle intended for commercial purposes.

Sec. 5—No one shall ride upon the rear of a vehicle without the driver's consent.

Sec. 6—Coasting is prohibited where dangerous.

Sec. 7—The use of a motor muffler cut-out is prohibited.

Sec. 8—Dense smoke from motors is prohibited.

ARTICLE VIII—CONTROL, TREATMENT AND CONDITION OF HORSES

Sec. 1—A horse shall neither be unbridled nor left unattended in a street or uninclosed space, without being safely fastened, unless harnessed to a vehicle with wheels so secured as to prevent its being dragged faster than a walk.

Sec. 2—No one shall ride, drive or lead a horse not so shod as to prevent falling on a slippery street; over-load, over-drive, over-ride, ill-treat or unnecessarily whip any horse; crack or so use a whip as to excite any horse other than that which he is using, or so as to annoy, interfere with or endanger any person; or use a horse unless fit for its work, free from lameness or sores likely to cause pain, and without any vice or disease likely to cause accident, injury or infection.

The definitions in the highway traffic regulations proposed for standardization have been amplified and simplified. The directions as to careless walking are designed to cover the most important precautions necessary for the safety of pedestrians and to prevent unnecessary interference with vehicles.

The article on reckless driving consists of general provisions to insure safety on the street for both pedestrians and vehicles. Sec. 2 is most important. It is intended to take the place of the old and variously written right-of-way clauses, none of which is considered generally satisfactory. The old New York regulation of giving the right-of-way to vehicles going north and south over those going east and west is moderately satisfactory in New York but in some cities not so good. Also, the regulations adopted in some other cities of giving the right of way to the vehicle on the right is considered bad because, if carried out on crowded thoroughfares, it would result in a complete block of traffic. So far, no one has suggested a right-of-way regulation that is invulnerable, and the conclusion reached is that there is no safety for pedestrian or vehicle except through absolute control of vehicles at crosswalks, street intersections and junctions.

The revised writing of the regulation as to overtaking streetcars covers all that is necessary and is more apt to be observed cheerfully, because it is not unreasonable. To make it too drastic is to defeat its object—safety.

The general right-of-way clause has been eliminated but is covered sufficiently by Sec. 2 of the article on reckless driving. Sec. 1 has been changed so that vehicles generally shall facilitate the right of way of certain specified vehicles, thus putting the responsibility on vehicles generally but not relieving the specified vehicles from the consequences of carelessness.

All the other articles and sections of the regulations remain unchanged except as to order or where they have been simplified or abbreviated.

Los Angeles Holds Eighth Annual Show

Total Exhibition Space 146,000 Sq. Ft.

LOS ANGELES, Cal., Jan. 12—Special telegram—Amid a scenic grandeur the like of which never before has been seen on the Pacific coast, the eighth annual motor show under the auspices of the Los Angeles Motor Car Dealers' Association opened here yesterday, Three tents with a total floor space of 146,000 sq. ft. house the exposition, which is automotive in character, trucks, tractors and accessories as well as passenger cars being on display. The decorations are Chinese, more than $150,000 worth of draperies, tapestries, statues and other works of oriental art being used. This is the first exposition of the new year in the United States and for that reason will be regarded with significance by the entire industry.

More than 200 passenger cars representing an even half hundred different makes, fifty-one trucks of nineteen makes, two tractor lines and fifty-two accessory exhibiters combine to make up a vast display which is truly lavish. This is strictly a dealers' show, put on at their expense, and each car, truck and tractor represents an established agency. The only cars not previously shown are the Elgin and Essex, which in itself is an indication that although there are many new lines of cars on the market dealers are proving slow to obtain identification. Service and Master are the new trucks. Fordson and Cleveland are the only tractors, the reason being these are the only makes represented in the dealers' association membership. This is the first time any tractors have been in the show.

It is quite evident the dealers are gambling heavily on prospects for future business. They have gone to enormous expense to put on the show in the effort to dissipate the atmosphere of depression that has shrouded automotive buying here for several months. Early indications are that the general public will respond. Everything that could be thought of to make the show as a whole, as well as individual exhibits, attractive has been done. Some cars are fitted with special bodies made in Los Angeles and so equipped that the list price of the car has been more than doubled. There never has been seen here the equal in special construction.

Several applications for dealer propositions were reported the first day. The distributers need sub-agents now to strengthen their representation and are trying to line up the right sort. It is believed the show will help them. Retail sales are being made. It is too early at this time to predict how extensive these will be. The opening day's attendance was estimated at 15,000. The crowds to-day were somewhat larger, and these figures will be about the average for the week. There is a noticeable absence of entertainment features. This show is intended as a business getter. The show committee reasoned there would be a better chance to transact business with a crowd that was drawn to the show to see passenger cars, etc., alone than from a crowd that came to be entertained.

284,000 SQ. FT. FOR SHOW

Minneapolis, Minn., Jan. 13—The Northwestern Automotive and Industrial Exposition will be held in the exposition building with 284,000 sq. ft. of floor space. The dates, as announced previously, are Feb. 15-22. The building is the biggest in the Twin Cities and last was used as army barracks. The Government spent $125,000 on improvements. The place is famous as the convention hall where Harrison was nominated for the Presidency in 1892. The most exhibits ever seen in the Northwest are assured by H. E. Pence, president of the show.

DALLAS TO HOLD SHOW

Dallas, Tex., Jan. 11—Dealers in Dallas have completed plans for the first annual mid-winter show to be held Jan. 16-18. The show is expected to be one of the biggest of the kind ever held in this section of the Southwest. Twenty-two Dallas dealers will exhibit closed car. The show will be in the annex of the Adolphus Hotel. Dr. W. G. Langley, local representative for the Franklin car, is in charge of the show plans.

M. A. D. TO BROADEN SCOPE

Milwaukee, Wis., Jan. 13—Plans which have for their purpose the amalgamation of all sections of the motor car and supply industry and trade of Milwaukee under the leadership of the Milwaukee Automobile Dealers, Inc., are being completed by a special committee created a short time ago, with Alfred Reeke as chairman. It is hoped to complete the organization so that it will be one of the results of the annual Milwaukee show, Jan. 24-30.

Chairman Reeke will send an invitation within a few days to all dealers in passenger and commercial cars, tire, accessory and supply dealers and the operators of public garages and repairshops to participate in the benefits to be derived from a compact, cohesive body. The plan would permit dealers and repairmen to enroll in the M. A. D. as associate members. Until now the M. A. D. has consisted solely of the legitimate distributers and dealers of Milwaukee, handling passenger and commercial cars.

Dealer Activities Planned for Coming Shows

Wisconsin Trade Will Meet Jan. 24-30

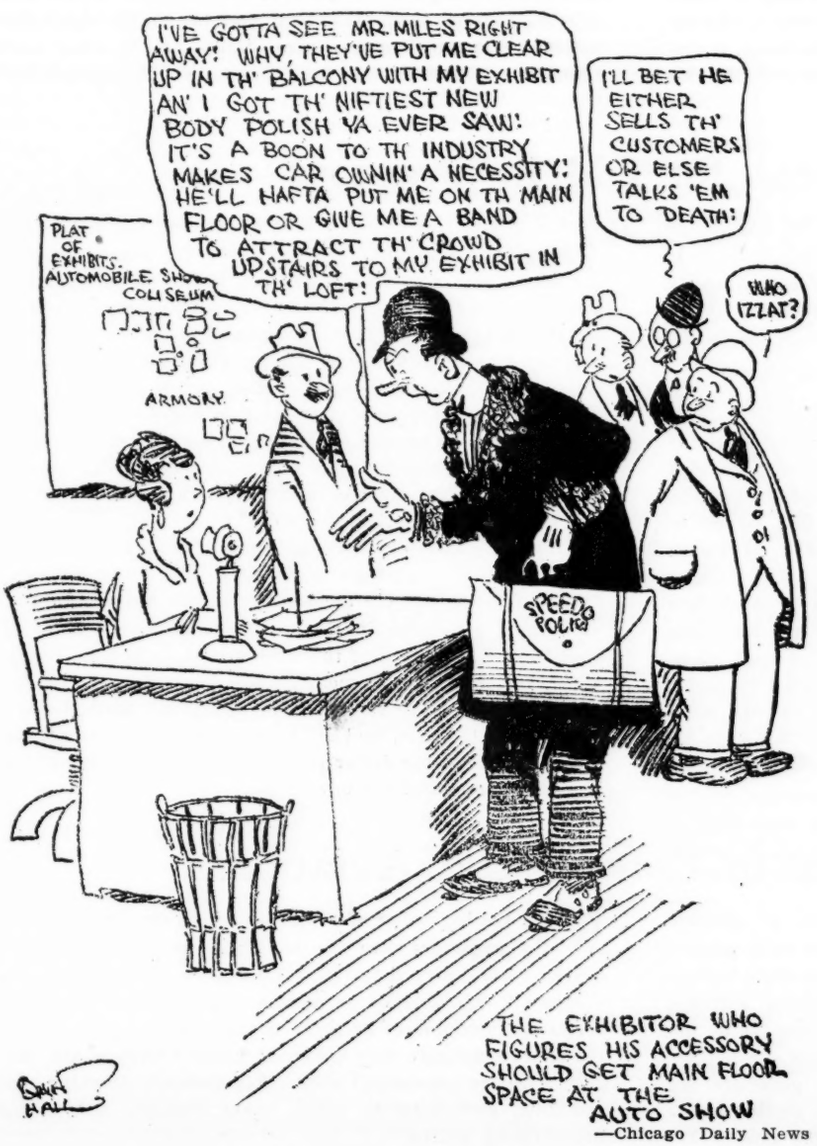
MILWAUKEE, Wis., Jan. 13—A two-day convention of motor car dealers of Wisconsin will be held under the auspices of the Milwaukee Automobile Dealers, Inc., during the twelfth annual Milwaukee show in the Auditorium, Jan. 24-30. The Milwaukee association in past years has devoted one day of show week to entertaining the dealers, but since an organization of state dealers was effected at a meeting held during the annual fall show in September the congregation of the upstate tradesmen this time will assume the style and proportions of a real convention.

As the Wisconsin legislature went into biennial session at Madison last week, and already a swarm of bills affecting the motor car industry is appearing, the convention during show week will be of importance in the direction of devising ways and means of fighting inimical legislative propositions and safeguarding the interests of manufacturers, dealers and users as well.

The state dealers at their meeting in Milwaukee last September authorized President A. J. March of the Milwaukee association to create a legislative committee, consisting of a representative dealer in each of the seventy-one counties of Wisconsin. Alfred Reeke is chairman, and Bart J. Ruddle, assistant secretary of the M. A. D. and manager of the show, is secretary.

Dealers have a grievance in respect to the existing law defining the use of dealers', or star number plates. The legislature of 1917 amended the license law so that it is necessary practically for dealers to take out several licenses. Star numbers now may be used only on demonstrating cars when used as such. Under these conditions, the dealer trade has what is considered an unnecessary and heavy burden to bear, and a change is being sought to make the statute read as it is intended.

Before the Show


I'VE GOTTA SEE MR. MILES RIGHT AWAY! WHY, THEY'VE PUT ME CLEAR UP IN TH' BALCONY WITH MY EXHIBIT AN' I GOT TH' NIFTIEST NEW BODY POLISH YA EVER SAW! IT'S A BOON TO TH INDUSTRY MAKES CAR OWNIN' A NECESSITY! HE'LL HAFTA PUT ME ON TH MAIN FLOOR OR GIVE ME A BAND TO ATTRACT TH' CROWD UPSTAIRS TO MY EXHIBIT IN TH' LOFT!
I'LL BET HE EITHER SELLS TH' CUSTOMERS OR ELSE TALKS 'EM TO DEATH!
WHO IZZAT?
PLAT OF EXHIBITS. AUTOMOBILE SHOW COLISEUM
ARMORY
SPEEDO POLISH
THE EXHIBITOR WHO FIGURES HIS ACCESSORY SHOULD GET MAIN FLOOR SPACE AT THE AUTO SHOW
BART HALL

—Chicago Daily News

Makers Plan Large Chicago Events

CHICAGO, Jan. 13—All space is taken for the show, which opens Jan. 25, in the Coliseum and Annex, and only two spaces remain on the floor of the First Regiment armory. Sixty-nine car and 120 accessory exhibits are listed. Total exhibitors for the truck show, which follows the passenger car show with only one intervening day, are forty-three truck and forty-three accessory.

Indications are that the approaching show will be the regular national show in everything but name. Many of the makers have planned conferences of their selling organizations for then as in previous years. Maxwell expects to have 400 dealers at its meeting at the Congress hotel; Paige looks for about 300, at the same place, for its meeting; Franklin and Cole, also at the Congress, and Chevrolet, at the Blackstone, are scheduling like events. Other concerns which have planned dealers' meetings but have not completed arrangements are Elgin, Pierce-Arrow, Velie, Westcott and Grant.

Decorations Purple and Gold

Meanwhile the work of preparing the decorations goes merrily on. These are not to suffer as a result of the uncertainty as to whether there would be a show this year. They were begun long before the N. A. C. C. abandoned its national shows prior to the armistice. A huge canvas, in purple and gold, will cover the ceiling of the Coliseum. A curtain of similar design will be hung at the south end, while at the north end a canvas will cover the bandstand. Eight gigantic sunbursts are to decorate the sides of the Coliseum above the balconies.

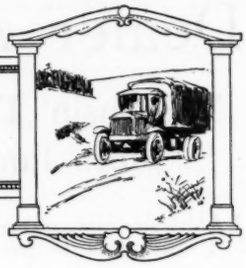
The booths will have mahogany colored pillars, each bearing at the top a large white-starred globe of blue, the whole topped by a bronze eagle. Shields of the Allied nations will be placed at intervals throughout the building. Similar decorations will be used in the Annex and the armory. A feature of the decorations this year will be the representations of motor cars which will be produced on the canvases.

HARTFORD SHOW DATES SET

Hartford, Conn., Jan. 11—The annual motor car show of the Hartford Automobile Dealers' Association, Inc., is to be held in the armory, Feb. 22-March 1. This provides for a seven days' run with a Saturday opening and closing. Ben. F. Smith is manager.

Passenger cars will be displayed on the main floor, which provides more space than the street floor of Madison Square garden; trucks in the basement, as well as tractors, trailers and farm implements. The side rooms occupied by the various companies of the state guard under whose auspices the show will be given also will be available for passenger car displays.

EDITORIAL



Highways and Traffic Regulations

HIGHWAYS and traffic regulations might be taken as two separate and distinct matters for consideration by some people, but the Highways Transport Committee thinks otherwise, and MOTOR AGE is inclined to side with the committee. One might just as well consider the dealer and his business as entirely unaffected by traffic regulations, when it is becoming more and more apparent every day that such is not the case. Lack of uniformity in the parking rules of neighboring and more widely-separated towns and cities has prevented many a sale of a car and has robbed the dealer of more than one prospect and the repairman of more than one customer.

IN advocating the adoption of standardized traffic regulations by cities all over the country the Highways Transport Committee acts on the theory that traffic regulations affect highway transport, as they do. Any concern or individual doing an intercity express business with trucks sooner or later meets traffic annoyances, especially if a driver, through very ignorance, transgresses a traffic rule of some law-enforcing community on his daily route.

THE system written out by Eno, the man whose plans were adopted by Paris and followed by London, is reproduced in this issue. This is the same system adopted by Paris and advocated by MOTOR AGE for several years in connection with its efforts to bring about uniform traffic regulations. The only difference is that the code, as it might be termed, has been simplified somewhat, and more is left to local interpretation with the fundamental, basic regulations those that any car owner—or truck owner—might be cognizant of, even if he is from a distant section of the country.

IT now is proposed that these regulations should be made a part of the police regulations or, if there is no police department, an ordinance. No change could be made by an unauthorized person. Such change would have to be universal if adopted and adopted only through a national highway traffic regulation commission. Eno advises a Federal traffic act to bring about the standardization of general traffic regulations throughout the country.

New Ideas for Old in Tractors

WHENEVER and wherever men get together to discuss the tractor trade the subject of service comes to the fore. It is the dominating fact of the whole situation. Upon the quality of the service given depends the degree of success attained; upon the way service is given depends the percentage of profit the dealer makes.

AT THE convention of Minnesota implement dealers at Minneapolis last week the issue was clearly joined between the old-school implement dealer who has been brought up with the idea that unlimited free service is a necessity in the implement trade, and the newer automotive dealer, who limits his free service to the instruction period and charges for it afterward.

THE significant thing about this is that the old-school dealers are making no money selling tractors, hence are lukewarm and more or less indifferent about the trade. Many of them actually refuse to sell tractors because they cannot see how, under existing conditions, it is possible for them to make money. And, thinking as they do, doubtless they are right. But they have no right to protest if other dealers, thinking differently and doing differently, take over the business they ignore.

THE automotive dealers who are charging for service are making money selling tractors, even if commission discounts are low. Nor are these discounts likely to be greater soon. Doubtless they could be raised to advantage in many instances, but the fact remains that in all probability they will not be. This for the reason that tractor manufacturers are not disposed to give larger discounts in view of the obvious fact that the newer dealers who are selling tractors as they ought to be sold, and who are charging for service as it should be charged for, are making money, and are relying upon volume sales to make the business worth while. Nor can the manufacturers be blamed for taking this view of the situation.

THE fact is that the automotive dealers are bringing about a rapid revolution in the tractor trade which cannot fail to meet with the approval of the tractor manufacturers. By the same token, too, these better methods are destined to be employed in the implement trade as well. Old ideas and methods must give way before the new, and if, in the process, a change comes at the same time in the dealer personnel of the trade this change will be neither unnatural nor unwelcome.

Possibilities in Commercial Aviation

TO ONE who has not followed the development of aircraft through other mediums than news items in the daily papers, the commercial possibilities of aviation seem to offer little beyond what may be called in general stunt work. Commercial aviation has had very little development on the face of it, insofar as the casual reader is concerned, since the war started and our impression of the peacetime activities of aircraft quite generally are limited to such things as the exhibition flight and similar enterprises with which we were familiar previous to the war.

WITH the beginning of hostilities in Europe the efforts of aviation engineers were directed wholly toward the production of special craft designed for special purposes whose objects are quite different from those of commercial aircraft and which naturally led to the development of types of craft which, along certain lines, the more completely they answered military purpose the less fitted they were for commercial work. For instance, pursuit plants subordinated everything to speed, rapid climbing and ceiling and maneuvering ability.

THE questions of safety and economy of operation were secondary. Nevertheless in the matter of safety very few of us realize that even the combat machines are in themselves not at all hazardous, provided the hazard of enemy activities be eliminated.

THE dangers of aviation were exaggerated in our minds by newspaper reports during the war of accidents to student aviators and their instructors in the training camps. The dangers were real enough, but they were due not to the craft employed so much as to the fact that the students were being trained to do hair-raising stunts—aerial acrobatics—which would give the student the upper hand over his enemy in combat and permit him to get away when it became necessary in combat. Such stunts are not a requisite of commercial flying, and the hazards that pertain thereto would not be present with peacetime aviation.

THE seeming temporary fiasco of the New York-to-Chicago aerial mail left the impression with many that for other than comparatively short distances airplanes cannot be adapted to postal service. This, however, is not the case. The chief difficulty, insofar as it is permitted to divulge the real state of affairs, has seemed to be in the fact that it was endeavored to institute the aerial post enroute between New York and Chicago before the proper arrangements for the necessary landing fields, supply stations and so on were prepared. It is no less wrong to condemn the possibility of such a system than it would be to condemn the failure of carrying mail by steam train if proper roundhouses, trackage facilities and so on were not provided.

WITH the cessation of hostilities the general assumption might be that the vast number of aircraft which possibly may be liberated from army service could be turned immediately into such service as the postal service with good results. In some instances this is possible; in others it is not. Aircraft developed for military purposes does not consider the question of expense. The type of plane developed for military work may not always be efficient in commercial work or in postal service.

THE Liberty engine, which has proved to be the best aviation engine for aircraft war work, is not necessarily the best for peacetime work. A Liberty engined plane, such as the D. H. 4, flying at say 120 to 160 m.p.h., requires about 30 gal. of gasoline for the hour. Sufficient gasoline for a flight of say for 10 hr. between Chicago and New York would require 300 gal., that is, 1800 lb. for fuel alone. This would limit considerably the carrying capacity of the paying load.

POSSIBLY an engine of less power and less high speed capability with a better economy and lower landing speed would do better. That is the thing that is being worked out now by the postal department. Of course, there is no attempt at the present to make a continuous 800-mile flight in the postal service, but such a thing is a possibility. In fact, a continuous flight of a duration of over 13 hr. was made as long ago as 1912 in France, in which over 621 miles were covered without alighting. In our country, an American girl, Miss Katherine Stinson, last year flew from Chicago to Binghamton, N. Y., over 600 miles, in 10 hr., 10 min., in a continuous flight.

It's Almost Here!

ARE you looking for it? The ANNUAL SHOW ISSUE AND SPECIFICATION NUMBER of MOTOR AGE. It's on the way. It will be out January 23—next week—and will contain all the big features you have been looking for this many a day.

The Show Issue will tell you all about the industry. Dealers and factory sales managers will give you both sides.

The Show Issue will describe for you the cars of 1919, with illustrations.

The Show Issue will trace the history of the growth of mechanical features in tendency charts.

Then there is more:

The Car Illustrated—photographs of the cars for 1919.
Short Car Descriptions.
Complete Specifications of Cars, Trucks, Tractors and Farm-Lighting Plants, with Buyer's Guides.
News of the Shows and Many Other Good Features.

If you want to get set for the show season, you will find much of the information that will help you appreciate the shows more. Then, it is a good issue to keep. As usual, MOTOR AGE is compiling into this annual issue a wonderful volume of information. It will be especially valuable to the dealer because it contains vital data on not only his own line but all the other lines of cars, trucks, tractors and farm-lighting plants.

REMEMBER—JANUARY 23

The panorama reproduced herewith is one of the first photographs to be received in this country showing the A. E. F. passing

Detroit Car Plants Ready for Busy Year

Unfilled Orders Await Production —Michigan Industry Coming Back

DETROIT, Jan. 10—The big passenger car plants are preparing for a busy year. Owing to curtailment of passenger and commercial car business to give the war trade the right-of-way, most companies have hundreds of unfilled orders ahead of them. Plants such as the Packard Co., which devoted its time almost exclusively to war orders, is stripping many departments and remodelling and installing machinery for passenger car production.

Makers aver that in from sixty to ninety days the big majority of the plants will be operating on a normal peace basis. Several companies plan to increase production schedules to care for unfilled orders as well as new business. Part and accessory makers also anticipate a busy year. Thus, it is pointed out, labor conditions will quickly adjust themselves and the shops will rapidly absorb the present excessive labor surplus.

Returning soldiers have aggravated the situation. Practically every motor car company is placing its returning Yanks back on their old jobs. However Detroit is the mecca for hundreds of army men from other parts of United States as well as Canada. They are coming in such numbers that the board of commerce has been obliged to act to head them off by sending out warning that work in Detroit is scarce.

Other Michigan industrial centers are rather sluggish at present. All report a surplus of labor, but everywhere future business prospects are excellent.

Conditions are quiet at Pontiac. Oakland is having difficulty in getting materials. Officials declare the plant could handle 200 jobs daily if materials would come smoothly. The company contemplates the production of 30,000 cars by Aug. 30. The only war contract Oakland had, called for the manufacture of military trailers, and this was filled without disturbing its commercial output, so the company is ready to resume its commercial work almost immediately.

Lansing plants expect to hit their old stride in sixty days. Most of the companies there are taking inventory. Many men are out of work. Labor conditions are not stagnant however. Men laid off at one plant generally find work at another. Oldsmobile is taking on a few men. Reo is re-adjusting several of its departments before it can again resume its commercial work. This company practically suspended its regular business to fill a contract for 5-ton artillery tractors.

Buick at Flint is increasing its production. The company schedule calls for 550 cars daily by spring. The company is making 300 engines daily at present. Labor conditions at Flint, in general, are not bad, although there is quite a surplus at present.

Since the signing of the armistice some of the larger Detroit companies have cut their working force 25 per cent.

ESSEX OUT THIS MONTH

Chicago, Jan. 13—The Essex, preliminary description of which appeared in MOTOR AGE last spring, will be introduced to the public formally Jan. 16. Practically all dealers have been provided with demonstrating cars already. This is a moderate-priced, light-weight car with many distinctive features, combining the advantages of lightness and economy of the less expensive car with the comfort, performance and durability of the costlier car.

OVERLAND WAR CONTRACTS HUGE

Toledo, Ohio, Jan. 11—Willys-Overland completed a total of $80,000,000 worth of war contracts in its own and allied plants. The work entailed expenditures of $12,000,000 for new equipment and buildings. The contracts included Curtiss training plane engines, French 75-mm. gun carriages, machining 8-in. shells, Liberty eight- and twelve-cylinder engines, Mark 111 adapters and lifting plugs for shells, Sunbeam airplane engines and military tractors for the British.

AUTOCAR CONVENTION HELD

Philadelphia, Pa., Jan. 11—Fifty cities were represented at the annual convention of the Autocar Co., which has just closed after a three-day session. Two hundred sales managers, dealers and salesmen got together at the factory in Ardmore and at selling headquarters in Philadelphia and interchanged ideas and listened to instructive addresses. There was a banquet at the Hotel Adelphia and a theater party. Among the important announcements were the following:

The company will restore to his former position not only every man who left the company for service in the war—and there were 400 who went overseas—but also will take on the force the man designated as his best friend by every employee so returning.

Production will be materially increased this year over last.

METZ DROPS FRICTION

Waltham, Mass., Jan. 10—The last exponent of friction drive for passenger cars has switched. The Metz Co. is bringing out a new car which will have gear drive and be known as the Master Six. It will be powered with a 45-hp. six-cylinder engine, having three-speed sliding gear transmission, semi-floating rear axle, I-beam front axle and semi-elliptic springs on the rear with Hotchkiss drive. Five tires, 32 by 4, on demountable wire wheels will be used. Electric equipment throughout is standard. The new car will have a wheelbase of 117 in. and weigh less than 2500 lb. Fuel feed will be by the Stewart vacuum system. The car is to sell at $1,495.

NEW APPERSON MODEL SOON

Kokomo, Ind., Jan. 9—The Apperson Bros. Automobile Co. will shortly make public the details of a new moderate-priced model especially adapted for export trade. The company has arranged to maintain its export headquarters with C. T. Silver, Inc., former Apperson distributer for the Metropolitan territory. The export department will be in charge of George H. Strout, who henceforth will make his headquarters in the Silver establishment in New York.

TO MAKE STANDEX SPECIALTIES

Chicago, Jan. 10—The resignation of V. N. Hansen as sales supervisor at the Stewart-Warner Speedometer Corp. is among the trade announcements of the new year. Mr. Hansen has been identified with the motor industry in various capacities since the days of the one-lunger and now terminates his three years' connection with Stewart-Warner to engage in the manufacturing business. It is understood that Mr. Hansen will devote his entire time to the active management of the

before President Wilson Christmas day. As is natural, motors were very much present. This view shows part of the tanks in the review

Standex Mfg. Corp., which he has organized in this city to manufacture and market motor specialties under the trade name Standex.

Prior to his connection with Stewart-Warner, Mr. Hansen was engaged in the manufacture of the V-Ray spark plug at Marshalltown, Iowa.

The initial Standex product is an automatic lubricating system for Fords that will insure the same mileage and more cleanly engine conditions, through the use of from a third to a fourth the cylinder oil now ordinarily consumed, according to the makers.

NO 1919 EMPIRE CARS

Indianapolis, Ind., Jan. 10—The Empire Automobile Co. will not be in production with 1919 models, according to Charles B. Sommers, one of the financial heads of the concern. The lease on the three-story plant in which the manufacturing activities of the company have been carried on expired in December, and the company has not renewed, as it is expected to lease or conduct a building better suited to its needs. The old building has been leased by Hurst & Co., a mail order house of Indianapolis.

FULTON DEALERS MEET

Farmingdale, Long Island, N. Y., Jan. 10—Dealers from every state in the Union and Canada and Mexico gathered at the factory of the Fulton Motor Truck Co. here for a convention Wednesday and Thursday. Plans for a big year in production and distribution of the Fulton 1½-ton truck and the new Fulton Locomotor were discussed. The dealers came to New York as the guests of the factory and were taken to the plant in a special train. Dealers were urged by the service manager, C. J. Fox, to carry an adequate supply of parts for the better serving of owners and to take advantage of the supply of skilled mechanical labor coming from the Army on demobilization. A banquet was held at the Waldorf-Astoria Wednesday night.

GENERAL TIRE EXPANDS

Akron, Ohio, Jan. 11—The General Tire & Rubber Co. has increased its capital stock from $1,000,000 to $2,500,000. Sales for 1918 totaled $3,000,000, an increase of 125 per cent over the previous year, and it is expected this will be doubled this year. The additional capital will be used for new buildings and machinery to increase production.

Roads Planned in Reconstruction

Canada Will Build Highways to Open Up Country for Immigrants

WINNIPEG, Man., Jan. 10—Road building is an important part in the Canadian reconstruction and post-war development policy which recently has been announced. Canada has learned that immigration follows fastest in the wake of good roads and therefore has outlined a program of public road-building of national scope. Before the war, Ontario and Quebec were spending millions on new roads in Northern Ontario and the back-country of Quebec, in the effort to keep ahead of the flood of immigration that pushed along in advance of the opening of the countr .yT he western provinces likewise were carrying on extended work, which was cut short when war was declared. Now the close of the ar and the prospect of an enormous influx of soldiers and immigrants from England, Europe and the United States has placed the road-building program in the front rank of the public construction work approved by the minister of public works and the minister of immigration.

Completion of the transcontinental highway extending from Monoton on the Atlantic to Vancouver on the Pacific, most of which has already been built, needs to be linked together by stretches across the Rockies and in parts of the Highlands of Ontario. A new tourist highway from Edmonton westward into the Rockies to Jasper Park and eventually clear through the Prince Rupert is announced from Edmonton, while roads into the north country of the three provinces, Manitoba, Saskachewan and Alberta, is provided for in new legislation before the provincial parliaments.

Road building is an even more important part of the Canadian program, according to the government plan, because railroad building which in the period following the Civil War in the United States, opened up the western states beyond the Mississippi with 15,000 miles of track, cannot be duplicated in the Dominion, where railroad construction is already larger per capita than anywhere else in the world.

I. H. C. SELLS CHAMPION

Chicago, Jan. 10—In accordance with the decree of the court that it dispose of the Osborn, Milwaukee and Champion lines, the International Harvester Co. has sold its entire Champion harvesting machine business to B. F. Avery & Sons, Louisville, Ky. The decree was entered into last summer after an agreement between the company and the Department of Justice. It was followed by the sale of the Osborn business to the Emerson-Brantingham Co. The Milwaukee line remains to be sold.

WILLYS-MOLINE IN CANADA

Moline, Ill., Jan. 11—The Moline Plow Co. has contracted with the Willys-Overland, Ltd., of Toronto, for distribution of Moline Universal tractors and implements for Canada. This means the sale of the Moline Universal is to be pushed in an aggressive way in Canada, as the Willys-Overland sales organization covers the entire Dominion. Willys-Overland branch houses will carry a complete stock of repair parts.

MICHIGAN TO TEACH TRACTOR

Lansing, Mich., Jan. 10—The Michigan Agricultural College this winter is offering two short courses of four weeks each in truck and tractor mechanics. The courses begin Jan. 20 and Feb. 17. Applicants must be at least sixteen years old. The purpose of the course is to train operators of farm tractors, gas engines and trucks. Farm conditions will guide the outlining of the work. The principles of mechanism of machines will be studied and should enable the operator to make adjustments and ordinary repairs with intelligence and confidence.

A. A. A. TRUCK BOARD

New York, Jan. 11—The American Automobile Association has created a motor truck board with Stedman Bent, president of the Automobile Club of Philadelphia, as chairman and John R. Eustis as secretary. The board will include men from all sections of the country. Every A. A. A. club that creates a motor truck committee will be given representation. George M. Graham, chairman of the motor truck committee of the National Automobile Chamber of Commerce, has been asked to serve on the new board also.

Rickenbacher stands at the right with Bradley, Motor Age's correspondent, at the left, and one of the Hispano-Suiza engineers between them

NEW YORK, Jan. 10—Capt. Eddie Rickenbacher, American ace of aces, with twenty-six German airplanes to his credit officially, sails from Liverpool Jan. 16 for New York. He will be the guest of honor at a banquet to be given to him by the Contest Board of the American Automobile Association. Columbus, Ohio, his home town, Chicago and Detroit also are asking him to attend banquets as their guest.

A reception committee headed by Richard Kennerdell, chairman of the A. A. A. Contest Board, will meet Captain Rickenbacher at the docks.

It is more than likely that the A. A. A. banquet in his honor will be held Feb. 3, so that his friends in the industry, who will be here for the show, will have an opportunity to do him honor at the banquet.

BEECROFT BACK JAN. 23

London, England, Jan. 7—Special cable—David Beecroft, directing editor of the Class Journal Co., who has been in Europe since Oct. 26, will sail for New York on the Adriatic, Jan. 15. Mr. Beecroft went over as a member of the party of business paper representatives who were guests of the British government. All the party returned Jan. 2 except Mr. Beecroft, who remained to make a tour of manufacturing industries in Italy. The Adriatic is due in New York Jan. 23 or 24.

RUSSEL BACK TO PLANT

Detroit, Jan. 13—A. W. Russel has resumed active work as president of the Russel Motor Axle Co. He has been in Washington for almost a year and a half, becoming chairman of the axle division of the standardized truck conference in August, 1917, and later acting as assistant to the assistant secretary of war. In addition to this work Mr. Russel was a member of the War Credits Board.

Rickenbacher Coming Back to U. S. A.

Career of Former Racing Driver After He Went to France

PARIS, Dec. 6—By mail—Eddie Rickenbacher is now captain and squadron commander in the American Air Service. Soon after the signing of the armistice Captain Rickenbacher was given orders to prepare to move his squadron forward into German territory. This move was made a few days ago, and Captain Rickenbacker is now flying from a German airdrome. Before actual fighting stopped Rick had attained the position of ace of aces in the American army.

Eddie Rickenbacher has had a wonderful career since he came to France. He landed as a sergeant in the Signal Corps in 1917 and for the first few weeks was employed as staff car driver. He was on General Pershing's reserve, without, however, ever having the honor of driving the commander-in-chief. After a few week's service Rickenbacher applied for admission to the aviation schools, to train as a pilot. He was accepted and went through the usual course of training, qualifying as a chasse pilot. Instead of being sent to the front he was employed as chief of motor maintenance section at the big flying school at Issoudun, the largest school of its kind in the world.

Dissatisfied with the role he was filling, Lieutenant Rickenbacher applied for appointment to a squadron at the front. He was sent to the east of France as a member of the squadron to which he is still attached and first flew a Nieuport single-seater machine. In the great German drive on Paris last July, Rickenbacher's squadron was thrown into the fight at Chateau-Thierry. When the danger at this point was over, he returned with his squadron to his former position in the east of France.

In a giddy descent from a height of 4 miles Rickenbacher burst his ear drum and had to be sent back to Paris for medical treatment. He returned to the front before being completely recovered, with the result that two weeks later he was back in Paris, undergoing an operation.

He had just recovered from this and was being urged by his friends to take a vacation when the news spread abroad in military circles of the pending American attack in the St. Mihiel salient. Although he had not flown for a month and was not in good physical condition, Eddie Rickenbacher could not be held back as soon as he heard this.

During the first month after his return to the front he brought down thirteen German airplanes or captive balloons. The tactic he adopted was to go out in the early morning, just before dawn, and surprise the Germans while their balloons were on the ground. Or, the position of the balloons would be noted carefully during the day, and immediately after dusk a surprise attack would be made and the balloons destroyed while on the ground. On one occasion, while flying over German territory in the early morning, Rickenbacher observed a captive balloon being towed along the road by a motor truck. He swooped down and attacked it with his machine gun, setting fire to the balloon, sending the truck into the ditch and killing many of the crew.

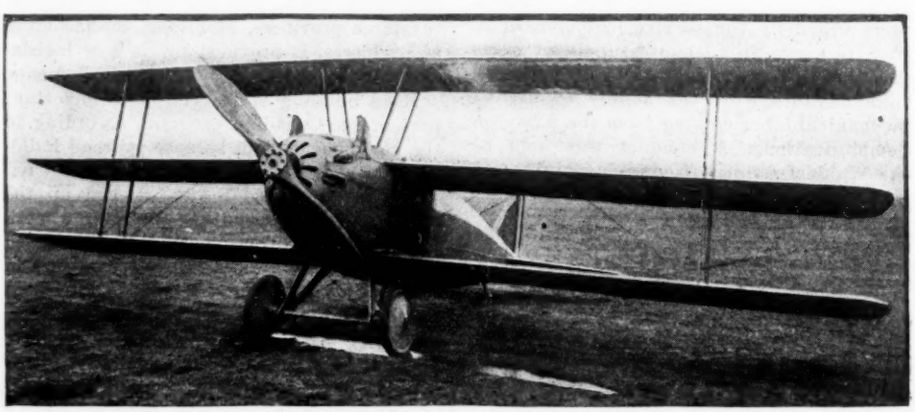
Many Lucky Escapes

Although he has come through the fighting without any serious injury, Rickenbacher has had many lucky escapes. During the first month after his operation his Spad biplane received forty distinct bullets in its wings, fuselage or engines. He considers that the greatest thrill he ever experienced was when he rammed a German plane in mid-air. He was 4000 meters up, fighting at close quarters, when he collided with the German and completely cut off his plane's tail. The enemy machine dropped like a stone but Rickenbacher was hardly in any better condition, for the collision had carried away the whole of the canvas of his right upper wing, and for 2000 meters he fell entirely out of control. Realizing that he could only get out of a desperate situation by desperate means, Rick opened his engine full out and put his controls over to the limit. He succeeded in straightening out just in time and made a rough but safe landing.

At the present time Captain Rickenbacher is flying a Spad single-seater scout plane with Hispano-Suiza engine.

JOBBERS' TRIAL BEGINS

New York, Jan. 11—The trial of members of the jobbers' association on a charge of violating the Sherman Anti-Trust law



World's fastest plane, built by Curtiss for navy. Its speed is 160 m. p. h.

began to-day in the United States district court in this city. The first day was taken up with the usual preliminaries and the second day's session is not to begin until 2 p. m. because of other business to which Judge Hand must attend. It is anticipated that the trial will last about a month.

The sessions are in the postoffice building on City Hall Square. The prosecution is being handled by District Attorneys Geyler, Matthews and Williamson. The chief counsel for the defense is James H. Wilkerson, Chicago, formerly a United States district attorney. He is assisted by Claude A. Thompson and Emory Bucker, New York, both experienced in Government cases. The following men are represented by their personal attorneys: George Edmunds, Edmunds & Jones, Detroit, by L. W. Goodenough; T. M. Rooks, Automobile Supply Co., Chicago, by G. M. Peters; William K. Norris, McQuay-Norris Mfg. Co., Chicago, by John F. Greene; F. B. Caswell, Champion Spark Plug Co., Toledo, by Edward J. Marshall. The jury was drawn today.

Latest in Prices

Cleveland, Ohio, Jan. 11—The Grant Motor Corp. has decreased the price of its touring car and roadster from $1,245 to $1,220. The other prices remain the same.

Cleveland, Ohio, Jan. 10—The Stearns Motor Sales Co. is guaranteeing its purchasers that there will be no reduction in the price of the Stearns-Knight cars during the next six months.

Pontiac, Mich., Jan. 10—The Oakland Motor Car Co. has announced a general price reduction of $110 on the following models. The prices are:

MODEL	NEW PRICE	OLD PRICE
Touring car and roadster	$1,075	$1,185
Sedan and coupe	1,650	1,760

Detroit, Jan. 13—The Federal Motor Truck Co. has guaranteed present prices on its trucks until July 1. These are:

1 -ton	$1,900
2 -ton	2,600
1½-ton	2,350
3½-ton	3,350
5 -ton	4,400
Light-duty tractor	2,500
Heavy-duty tractor	3,475

Cleveland, Ohio, Jan. 13—Peerless has increased its prices as follows:

	NEW PRICE	OLD PRICE
4-pass. roadster	2,760	2,550
4-pass. roadster	2,760	2,550
4-pass. coupe	3,320	3,050
7-pass. sedan	3,530	3,250
7-pass. limousine	3,720	3,690

Rochester, N. Y., Jan. 13—The new schedule of prices for the Selden Truck Sales Co., which went into effect with the new year, is as follows:

	NEW PRICE	OLD PRICE
TXR 1-ton	$2,000	$1,900
TWL 1-ton	2,200	2,100
JCB 2-ton	2,850	2,750
JWB 2-ton	3,050	2,950
NL 3½-ton	3,850	3,650
DL 5-ton	5,000	4,950

CONSIDERS PERMANENT LICENSE

Des Moines, Iowa, Jan. 10—A change in the Iowa license laws which will alter the method of issuing numbers and will look to the protection of owners against theft will be proposed at the coming session of the legislature by the committee on retrenchment and reform. The recommendation of the committee which held a meeting in Des Moines this week provides for permanent numbers for all cars to be renewed annually and to be issued from the county seats rather than from the office of the secretary of state.

Further recommendation is made that bills of sale for all motor cars shall be registered in the office of the secretary of state with the number issued and the engine and factory number. This is to be transferred and registered in the event of sale of second-hand cars. County sheriffs are to be authorized to collect delinquent taxes or to seize cars in the event of failure to pay taxes.

REPUBLIC PLANT FOR CANADA

Toronto, Ont., Jan. 11—The Republic Motor Truck Co., Alma, Mich., is about to enter the Canadian automotive field in a big way, according to Burrel D. Jones, who left the position of sales manager of Republic to become its general manager for the Dominion. Mr. Jones stated that the company would locate its plant in Windsor, Walkerville or Toronto. He deemed Toronto the logical and preferable place despite the contiguity of Windsor and Walkerville to the motor production metropolis, Detroit. At any rate, the matter will be settled soon, with the odds that the Queen City will be selecfed as the site for the Canadian plant.

As speedily as possible Canadian production will be started on the Republic 1-ton, 1½-ton and 2-ton trucks. The Canadian plant eventually will turn out all models.

MISSOURI LAW MAY CHANGE

St. Louis, Jan. 13—The legislative committee appointed by the St. Louis and Kansas City dealers' associations already have their work cut out for them before the legislature now in session. Prosecuting Attorney Sidener of this city has gone to Jefferson City to urge the passage of a new driving law, that is considered drastic. Some of the provisions are:

Cars shall stop 8 ft. behind the gates of any streetcar that has stopped.

Any person under eighteen years driving a car shall be considered guilty of a misdemeanor.

View of license numbers shall be unhampered and at night the rear number shall be lighted.

Making it a felony to be in possession of a car with the engine number effaced.

A definite definition of speeding and workhouse sentences for all offenders.

Why Highways Should Not Be Narrow

A load of hay can block a narrow road to traffic

NOW that the war is over and highway construction has again become possible, it is well worth while to call attention to the fact that communities which skimp on the width of their roads with the idea that thereby they are saving money are not acting in accordance with the best wisdom.

Generally where narrow roads have been built it has become necessary afterward to construct an apron along the sides of the road to increase the width so that the number of accidents are reduced.

The accompanying illustration shows a section of concrete highway which as a road surface is ideal but which, on account of its narrowness, has been the cause of a great many accidents. It is but natural that the improved surface due to the use of concrete is conducive to higher speed on the part of the vehicles.

When something like a load of hay comes along the road, it constitutes a menace to every other vehicle. As is shown by the photograph herewith, a driver on the right side of the road going toward the load of hay cannot see anything coming around the bend behind the hayload, nor could anyone coming around the bend see a car coming in the other direction.

Michigan has been a great sufferer in the way of accidents, due to narrow roads, and it has been necessary to add width by aprons in several instances.

The M. T. C. in France

By W. F. Bradley

Motor Age Special European Correspondent

In Two Parts—Part II

THIS article by Mr. Bradley is one of the first comprehensive stories on the work of the Motor Transport Corps in France to be released. In it are given statistics on the number of motor vehicles, their makes, etc., in the hands of the A. E. F., with details of the way in which motors served our own army.—Editor.

SINCE the critical days, when anything and everything on wheels had to be accepted and pressed into service, without any thought as to how long it could be kept running, a very complete system of supply has been evolved, under which every shipment, every package, can be traced from the moment it leaves New York to the time it enters the main supply park 4000 miles away. There were times when a truck or car having failed on account of some minor breakage had to be abandoned for lack of a replacement and within a few weeks had been picked as clean as ever vultures picked a corpse on the desert. Now parts can be supplied on order; in some cases when they are not available from America the M. T. C. manufactures them on the spot.

Series of Base Sections

From the American army standpoint, the whole of France is divided into three main portions. Around the coasts there are a series of base sections, numbered Base Section No. 1, Base Section No. 2, etc. Nearly the whole of the central portion is known as the intermediate section, and farther to the east is the advance section, with the actual battlefront on its outer edge. The Motor Transport Corps received its trucks and supplies at some or all of the base ports, beginning with Marseilles in the south and ending with Havre in the north.

At practically each one of the base sections there is a big reception park at which the trucks and touring cars are received, unboxed, assembled, greased and prepared for the road. Owing to the shortage of railroad freight cars, all passenger cars landing in France are sent to the front overland.

A single receiving station is placed conveniently in the rear of the American armies. Here all trucks are delivered, to be distributed to the forces in the field. The receiving station has space for storing 4000 vehicles, but as the American forces in France have always been far short of authorized motor transportation for the number of troops on hand, it is manifestly impossible to keep a reserve at the station. Urgent demands for motor transportation necessitated that vehicles be assigned as rapidly as they were made ready for issue. The distance to be covered on the driveaways varies with the port from which a start is made and averages about 380 miles.

Convoy routes have been mapped out from each port to the central distributing station; gasoline and service stations have been established along these routes, and all the roads have been marked with signs, in English. To relieve the railroad shortage as much as possible, useful loads always are carried. Preference is given to M. T. C. stores, which have to be dropped enroute or at the destination, but if no M. T. C. supplies are available, any load is picked up for any other corps, and, if necessary, the truck train will go a little distance out of its way to deliver the goods.

During the whole of the summer of 1918 these truck trains were running from the base ports to the northeast of France without a break. As each one left, a telephonic communication was sent to the headquarters of the M. T. C., and every evening each officer in charge of a truck train telephoned his location to the main office. In this way the commanding officer had continuous control over all the many truck trains proceeding from the south, the west and the northwest toward that main distributing station just in the rear of the American army.

Usually officers and men were engaged continuously on the task of bringing up trucks from the base ports to the front. Immediately one trip was finished they go aboard the train, returned to the port and set out with another convoy. In some cases, however, where personnel was short and trucks urgently needed, the organizations for which they were intended sent their own men down to the port to bring the truck train up. The fine road system of France made it possible for a wonderfully reliable and efficient organization to be established; without these roads, or with indifferent roads, thousands of tons of freight would have been thrown on a congested railroad system.

Supervises All Motors

Under the American army system the Motor Transport Corps has technical supervision of all motor vehicles; it is responsible for the procurement, reception, storage and maintenance of all motor vehicles and parts; it has to establish and operate all M. T. C. garages, parks, depots and repairshops; it has charge of the technical training of personnel and the salvage and evacuation of damaged vehicles. It is responsible for the operation of what are known as class A vehicles, that is, passenger cars and trucks used in the S. O. S., under instructions from the proper commanding officer as to their employment.

When motor vehicles are assigned, in accordance with tables of organization, to such organizations as divisions, corps troops and army troops, they become known as class B vehicles, and the role of the M. T. C. with regard to them is limited to technical supervision and maintenance.

At first sight this would appear to diminish the importance of the Motor Transport Corps. In reality, however, this is not so. Even in the Service of Supply, where the Motor Transport Corps operates its own vehicles, the M. T. C. officer who controls the vehicles has no authority to determine the use to which they shall be put. It is his duty to guarantee that the vehicles shall perform as efficiently as possible whatever work the commanding officer chooses to assign to them. When the vehicles are assigned to a combatant unit and move from the S. O. S. to the zone of advance, the Motor Transport Corps no longer has to provide the personnel and has

This is one of the many wooden towns erected for the Motor Transport Corps in France for its work with the A. E. F.

no control over the work which these vehicles shall perform. Full authority is invested in the commanding officer of the division, corps, squadron, group, etc., to use these vehicles on whatever work he may designate. But while having no voice in the tactical use of the motor vehicles, the M. T. C. maintains a very broad technical control; it supplies information on the proper methods of operation, care and maintenance and has authority to enforce these methods.

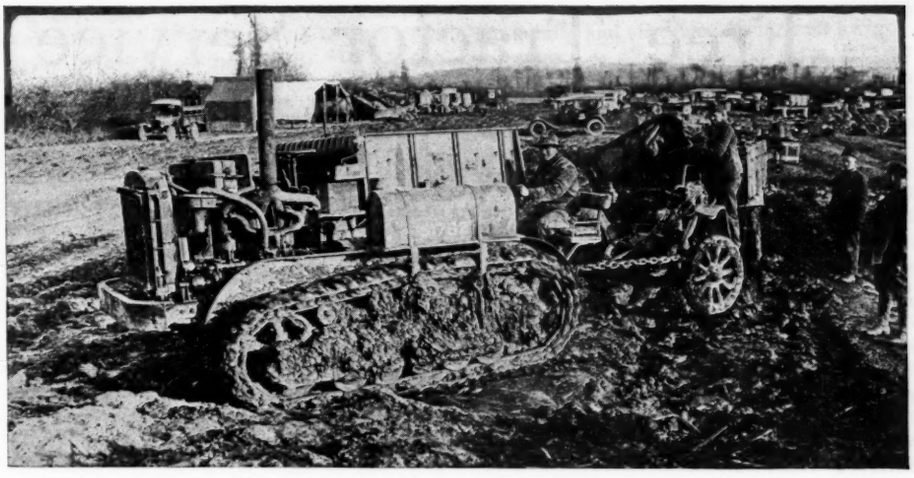
Maintenance of transportation nearly always comes as an afterthought. The first need is transportation, and after that has been provided necessity compels provision for its maintenance. Scores of examples of this have been found in the history of the American Expeditionary Forces in France.

The first attempt to solve the maintenance problem begins with the operator of the vehicle and the few simple tools placed at his disposal. This soon becomes inadequate, and the next step is to attach to a given number of vehicles a selected mechanic with an increasing number of tools. Then comes the service park, which provides maintenance of a more highly skilled character. The machine shop truck, or trailer, practically corresponds to the service park organization. Next in line comes the overhaul park and, finally, the reconstruction park, which has as its main purpose the rebuilding, salvage and remanufacture of motor equipment.

Staff of 5000

The two most important reconstruction parks in France take care respectfully of foreign-made vehicles and light and heavy aviation trucks and of all American-built passenger cars and trucks. This latter park is a huge organization with a staff of about 5000. It receives wrecked material by trainloads from the front. It undertakes the repair of this material wherever possible and salvages it when its condition does not warrant rebuilding. The reconstruction park handling foreign-built vehicles works on the same general lines but on a smaller scale.

There is this unsatisfactory feature about the M. T. C. as it is organized in the American army, that it only gets a vicarious kind of credit for the real work it performs. There are, however, plenty of occasions when the action of motor trucks has contributed largely toward saving the situation.



This Holt is working in its natural element—mud, doing rescue work in France. The photograph was taken last November, the wettest month in France. These are unnatural conditions, as there had been no time to prepare or drain the ground

When the German armies made their drive in the direction of Chateau-Thierry, and it looked as if the road to Paris was going to be opened by way of the Marne valley, an entire division, with all its supplies, was moved from the east to this threatened point by motor transportation and then moved back again when the danger was over. Truck trains carried fresh troops right up into the battle line; a few days later they carried those shattered troops back again, then came up with more fresh troops, thus keeping up such a steady supply of men and material that finally the morale of the enemy was broken.

From the day when the attack was launched on the St. Mihiel salient to the signing of the armistice, the motor service was kept going at full pressure practically day and night and again contributed in a very important measure to the success of the armies.

The signing of the armistice brought little change in the work of the M. T. C. While there were no munitions to carry, the general supply of food had to be kept up and lines of communications were lengthened. The first few weeks following the cessation of hostilities brought calls for more jam and less hardtack—luxuries were needed where they could be dispensed with during actual fighting—and the M. T. C. had to meet this demand. So long as an army of occupation remains, the M. T. C. will be kept busy; probably too, when reconstruction begins an enormous amount of work will be thrown on the Motor Transport Corps. Already this is becoming more and more apparent with the army of occupation.

More Work for M. T. C.

While the American army remains in France it is intended to give to the men vocational training. The M. T. C. will do its share in this by training men as drivers and skilled mechanics, in a course which will probably last three months. The existing schools and shops will be made use of for this purpose and practical and useful work will be carried out on the road and at the lathe. Thus, on leaving the army several thousands of men will come as skilled artisans ready to take a place in the industrial world.

NEW OREGON TRUCK ROUTE

Portland, Ore., Jan. 10—Truck freight service has been inaugurated by the Highways Rapid Transit Co. between Portland and Salem, a distance of 51 miles and the longest truck route in the state. The line will be operated under the sanction of the Highways Transport Committee.

Three trucks are now in operation.

The service is designed to serve merchants and individual buyers and sellers alike, to relieve the present freight congestion and reduce freight charges by reducing the number of times freight will have to be handled in transporting it to and from market.

PIERCE-ARROW CAR RECORDS

Buffalo, N. Y., Jan. 10—That all imperfections may be discovered and eliminated the Pierce-Arrow motor car company of this city keeps a life history of every passenger car and truck that leaves its factory. During the last year entries totalling more than 25,000 were entered in the record. These are all reports of imperfections in cars and trucks that have come to the attention of the company.

These records are constantly studied by the technical division of the service department. If the recurrence of any defect in several different cars is shown by the record steps immediately are taken to prevent a further happening of this weakness by substituting for the defective equipment some more serviceable type. The heads of the company believe they are amply repaid for this close supervision through the fact that the purchasers of Pierce-Arrow cars and trucks are aware that they are purchasing not only the car but the utmost service.

HOW GOODYEAR CHANGED WORK

Akron, Ohio, Jan. 10—A few days before the signing of the armistice the Goodyear Tire & Rubber Co. arranged to reorganize the factory for peace-time work, which then seemed near. Arrangements were made for the transfer of all workers on Government work to other duties immediately after receipt of Government's cancellation of orders.

Nov. 11 250 persons were employed in the departments handling straight Government orders, while 4000 were employed in departments working on partial Government orders and the preparation of stock and materials for straight Government work. So, 7250 workers were affected by the sudden termination of war. In a few days after the signing of the armistice all these had been transferred to peace-time operations with practically no confusion.

Free Tractor Service—No Gain

These Are Reasons Why Implement Dealer Is Dissatisfied — Motor Car Agent with Better Business Methods Claims Trade

By Fred M. Loomis
Motor Age Editorial Staff

MINNEAPOLIS, Minn., Jan. 10—The burden of free service which the tractor dealer loads onto himself, coupled with the conviction that free and practically unlimited service is necessary, is handicapping the implement dealer in the tractor trade and constitutes the principal reason why the implement trade either is dissatisfied with the results to date or is indisposed to engage in the tractor trade at all.

Tractor Without Service Worthless

As indicative of how a good many dealers feel, the statement of R. H. Retzlaff, veteran implement dealer at New Ulm, Minn., before the annual convention of Minnesota retail implement dealers here this week is typical. Mr. Retzlaff said, "The tractor business without any service given by the dealer isn't worth a d—n."

He said further, "Can you as an honorable man make a charge for tractor service and keep on the good side of the farmer? And you must keep on his good side."

What then to do?

Mr. Retzlaff continued, "All implement dealers should handle tractors as a patriotic duty. The tractor is here and it must be taken care of by us. Yet the manufacturer is not treating us right by not paying us for the service we have to give. The manufacturer must right this wrong if the tractor business is to be a success for the implement dealer. The implement dealer cannot charge for service. Maybe other kinds of dealers can. What will result will be that the fittest will survive. Some motor car dealers will be a success in the tractor business. Such will be the implement dealers of the future."

Service Determining Factor

Mr. Retzlaff is an experienced and influential implement dealer. He touches the nail right on the head. Service will be the determining factor in the tractor business. He sees this clearly. His class, the implement dealers, think no charge can be made for service. Hence the average retail implement dealer cannot make any money selling tractors on the present basis of commissions. He has, therefore, nothing to sustain him in the trade but a sense of duty. How long even the best intentioned dealer will stick under such conditions is problematical. Surely, many will shirk all responsibility and will stay out of the business entirely, as many are now doing. The motor car dealer, on the contrary, generally charges for service. This is a matter of education. The implement man has been educated to free service. The motor car man has been educated to charge for service.

The distinction to be drawn between the implement dealer and the motor car dealer in the tractor trade is that the former gives away all possible profit in free service and calls upon the manufacturer for larger commission discounts so that he can continue the free service practice and still make money, while the motor car dealer generally charges for all service after the initial instruction period is passed, hence can make money at present discounts and can and does rely upon volume sales to make good in the tractor business.

Which class of dealers strikes the manufacturer as most desirable?

The answer is to be found in the present trend of the tractor trade toward the motor car dealer, or to the implement dealer who is wise enough to adopt motor car selling methods. That this is the answer is proved also by the statements of men whose inclinations and preferences, due to their previous training, all run in favor of the implement dealer but who warn the latter that he must reform his methods if he is to be preferred. This was brought out clearly in the address of F. R. Pettit, sales manager of the Wallis Tractor Co., Racine, Wis., who spoke to the Minnesota dealers as the representative of the National Implement & Vehicle Association.

Never before has the position of the manufacturer of tractors been so clearly and forcibly defined as in Mr. Pettit's address, and never before have contentions in favor of the motor car dealer as the best tractor dealer been so fully sustained. The address is reproduced on these pages.

Will the implement dealer measure up to this standard?

E. P. Lynch, Faribault, Minn., says that while the tractor trade legitimately belongs to the implement dealer, not 5 per cent of those who have gone into the business have made any money. This is because the commissions are too small and the tractor trade will not look attractive to the implement men until they are made larger.

Boosts for Implement Dealer

Ing. Johnson, Hanley Falls, Minn., is equally positive that the implement dealer is an essential factor in the distribution of tractors and asserts that the dealer who hooks up with the tractor is headed for success. He says the tractor is the reviver of the implement business and the dealer who does not realize this and seize the opportunity is headed for failure and must get out of the business. The dealer must also be in a position to educate the farmer in the use of the highest type of power farming equipment. Also he must charge for service. Johnson has found in five years of experience that when he puts a charge of 75 cents an hour on service the farmer immediately learns a whole lot about his own tractor and does not spend all his time at the telephone asking for somebody to come out to fix a spark plug.

C. F. Miller, Long Prairie, Minn., also believes the tractor trade belongs to the implement dealer but that the condition seems to be that the implement dealer is not taking hold of it as he should.

Thinks Implements Support Tractor

Walter Knutson, Albert Lea, Minn., asserts that the implement line is called upon to support the tractor business, that is, the dealer must make enough profit on the tractor-drawn implements he sells to compensate him for profitless sales of tractors. Mr. Knutson believes the manufacturer should take cognizance of this fact and raise commissions.

J. K. Tatley, Ollie, Mont., asked how, when he had been taught that it costs 17 per cent of his sales to carry his overhead, it was possible for him to make money selling tractors on 10 per cent or even 20 per cent commission? He said it costs him from $5 to $10 a day to give service on tractors and all the farmer ever says in return is "Thank you."

A show of hands in the convention hall indicated that about half the dealers present handled tractors. Only a small proportion of those present sold motor cars as well. The vote revealed, significantly, too, that those handling both tractors and motor cars, the automotive dealers, generally made a charge for service, while the exclusive implement dealers almost universally made a practice of free service.

Complain of Lack of Gain

Probably at no dealer convention held thus far this season was the issue so clearly joined as at Minneapolis. Mr. Pettit forcibly indicated what the dealer must become if he is to be acceptable to the tractor manufacturer as an agent. Prof. F. W. Peck, of the University of Minnesota, who spoke on the tractor from the viewpoint of the farmer, emphasized the fact that the principal objection to the tractor on the part of the farmer, and the thing which makes the tractor of doubtful economic advantage to the farmer, is the inefficient service the dealers in general give on tractors. Even the dealers who were conducting a measurably successful tractor business attributed their success to service but admitted that that service must be charged for.

Upon the other hand, those dealers who complained that they were not making money on tractors for the most part admitted that they were giving practically unlimited service free. Dealers who had not gone into the tractor business excused themselves largely upon the score that

they could not afford to do business for nothing and that the free service made profit impossible.

This was the outstanding feature of the Minneapolis convention, for, with the exception of the regular routine business of the convention and the fire insurance interests of the association, practically nothing else of moment was discussed. The net result is the practical admission that, because of his better business methods principally, the motor car dealer is menacing the right of the implement dealer to claim the tractor trade. This is important because, as Mr. Pettit said, "With the tractor goes the tractor-drawn and tractor-driven machinery, and with the two goes unquestionably the horse-drawn line."

The following officers were elected for the ensuing year: President, C. W. Lyman, Northfield, Minn.; vice-president, M. S. Solum, Hitterdahl, Minn.; directors, G. A. Meyer, Lake Elmo, Minn., and Aug. Lundgren, Warren, Minn.

The Tractor Maker and the Dealer

By F. R. Pettit

Sales Manager Wallis Tractor Co.

ASSUMING, then, that we all recognize that the tractor is no longer an experiment and that its economic value has been established, there remains only to deal with the relationship between the manufacturer who makes them and the dealer who distributes them. Our problem, therefore, is somewhat simplified.

From the very beginning of the industry, farm implements have been sold to the farmer through the medium of the implement dealer, who, because of this very intimacy, has grown to know better than anyone else what the farmer wants and when he wants it. Old established methods of selling and distribution have prevailed with but little change for a great many years, principally because there has been no radical change until recently in the type or style of implements used.

Now the tractor comes and the mechanical power supplements or displaces horsepower on the farm, types of implements change from horse-drawn to power-drawn and gradually but surely we realize that with the coming of a new type of power must come a new type of selling, for power farming not only will revolutionize methods of agriculture, but methods of doing business as well.

Steady Distribution of Output Necessary

In order to manufacture economically and well, the manufacturer must necessarily see that his plant and equipment are operating on a basis of constant production. While there may be a seasonable demand for the machine he makes, there cannot be seasonable periods for making it. Therefore, it is necessary for the manufacturer to seek channels of distribution for this steady output of machines and those dealers will naturally be selected who are best equipped to assimilate this production during twelve months in the year. Millions of dollars are to-day invested in factories making farm tractors and the investment can be profitable only if the product is turned rapidly into cash; in other words, the large sums of money required to make tractors must be released and stocks of tractors be not permitted to accumulate.

During the period when the retail tractor selling organization is going through the process of evolution until such a time when the ultimate tractor dealer is determined, the manufacturer is attempting to create sales prestige for his product that will enable him to select his distributer. Such prestige, of course, must be based on the merit of his machine, the efficiency of his national selling and advertising plan and then select as his choice of dealers those that are most likely to emerge from the final competition. With this competition inevitable, the present implement dealer faces a crucial test and he will survive who is far-seeing and wise enough to picture and visualize a situation that to-day is so rapidly developing and taking definite shape.

There has been endless discussion, in which we have all participated, concerning the advisability from a manufacturer's standpoint of handling the distribution of tractors through the already established line of implement dealers or the motor car dealers, and it shall not be my purpose to attempt to enlarge upon this discussion. As a matter of fact, it is not possible to draw a sharp line of distinction between the two, as in a great many places to-day they are one and the same thing.

Let us closely analyze the situation from the viewpoint of the manufacturer and likewise of the dealer, for only by so doing can we get on a basis that is harmonious and at the same time permanent. The manufacturer makes and designs a tractor to do certain work under certain conditions and so guarantees it, but he knows further that his success or failure depends not only in making and selling his tractors but in making them stay sold, and a tractor will not stay sold unless it is sold intelligently. You would not hitch a coal team to a pony wagon nor should you hitch a pony team to a coal wagon. We come, therefore, to the demand on the part of the manufacturer not only for adequate representation for their product but intelligent representation, and in order for the dealer, whoever it may prove to be, to fulfill this requirement necessitates on his part in a great many cases at least considerable readjustment. I do not think, as some do, that the advent of the tractor means necessarily the passing of the implement dealer, but I do think that in order to survive with success and profit it is necessary for them to make a bid for the tractor business, for beyond any doubt, with the tractor goes the tractor-drawn and tractor-driven machinery, and with the two go unquestionably the horse-drawn line.

I hope my imagination is not running wild when I see eventually a super-dealer, if you please, who is sufficiently organized financially and otherwise to conduct a vigorous sales plan that will cover farm lighting equipment, water and furnace systems in addition to trucks, tractors and power farming machinery. The dealer under this plan would get away from his present department store idea where farmers come and buy to having salesmen who go out and sell. This may be altogether vague, but I think it not improbable that someone with capital and experience will emerge from his community and dominate such a line.

We are looking ahead to what we shall call the ultimate dealer and before he is chosen, be he an implement or automobile dealer or both, it is unquestionably true that in every community opportunity is likely to knock first at the door of the agricultural implement dealer and where he has the versatility and ability to change his methods to conform to the change in conditions, he may become the ultimate dealer and even develop into the super-dealer just mentioned. Outside forces are coming in that have been accustomed to an aggressive type of salesmanship, and the implement dealer must meet this aggressiveness with aggressiveness. There is no reason why the present implement dealer cannot adapt himself to whatever circumstances might arise and he is certain to see arise the vigorous and hustling methods of the motor car salesman. How does a salesman sell a motor car?

First—He has at all times a sample car on his floor. You should carry a sample tractor on your floor.

Second—He takes a prospective buyer for a demonstration around the town. You must demonstrate your tractor to your prospective buyer.

Third—He gets cash when he sells the car and you should get cash when you sell your tractor.

Fourth—He agrees to render service and furnish repairs to the owner of the car. You must do likewise with a tractor.

Not a Spring and Fall Business

On the assumption that a constant outlet for tractors is required by the manufacturer, it is, of course, advantageous that an alliance be made with dealers who are willing to get away from the current idea that tractors are today a spring and fall proposition. We are on safe ground, I think, when we say that up to now there has not been on the part of all of us a complete comprehension regarding the various kinds of work a tractor can do. We have been thinking of a tractor primarily in terms of plowing and on this theory it becomes a seasonable article. Government statistics, however, indicate that less than 60 per cent of the time is a tractor used in the field, the remaining 40 per cent being available for all kinds of belt work, and it should not be impossible to so utilize this 40 per cent as to make the machine a utility article practically the entire year.

It may be truly said that in some instances manufacturers themselves have not given to the pulley the consideration and attention it deserves and there is still much to be done in building into the tractor standard pulley sizes, etc., that will co-ordi-

(*Concluded on page* 23)

Aviation as Result of Peace

Makers Believe Commercial Aerial Flight Reality of Near Future

NEW YORK, Jan. 10—Commercial aviation, made possible by the designs evolved through the demands of peace just as present designs have come about in response to the demands of war, is a reality of the not distant future, according to the Manufacturers' Aircraft Association, which held a dinner here Wednesday evening. Demands of peace on aviation are expected to surpass the demands made by war.

Many factors were brought together at the dinner. Men who designed engines and planes, men who piloted them in combat and some of the countless others concerned in their welfare during the period of the war were there. All these men, speaking from experience, spoke confidently of transatlantic flights, planes in mail and commercial work, etc.

The first step in the commercial future of the airplane is to be the aeronautical exposition which the association will hold in Madison Square Garden Feb. 27-March 6. It is expected that at least fifteen planes can be shown there, together with details of designs and engineering features brought out in recent months.

Schools of aviation parallel to West Point and Annapolis are urged. Also, it was suggested that present manufacturers be encouraged to continue their aviation activities in parts of their plants.

What Ryan Said

I think, said John D. Ryan, former head of air work, the peace requirements—and I don't believe I am over-optimistic—will in time startle the world. I don't think it is coming today, and I should regret very much if it were pushed too much. I think with care and caution and development, and trial, that the airplane can be made as necessary in peace almost as it is in war, and I believe it is in good hands. I believe the manufacturers of this country who are in the aircraft business today will see it to their own interests to proceed cautiously, carefully and make as few false starts as possible, develop it on broad lines and bring it to the fruition it deserves.

I should think that it would be plain to almost anybody that in the necessity for the defense of a great country like ours, with a great coastline like ours a very extensive aircraft program is a very desirable thing.

I think the science of aviation should be encouraged in every possible way. I would have an academy of aviation, just as we have a military academy at West Point and a naval academy at Annapolis. I would educate the boys of this country from the time they are boys, in aviation, strictly, and almost exclusively, and I think that with the proper expenditure and the proper direction, within five years from now an enemy fleet that attempted to reach the shores of the United States would be detected and located so far out at sea that it would be put out of business 300 or 400 miles beyond the reach of the shore.

I think it is a great pity that the brains in the aircraft organization, naval, as well as in the army, should be scattered. I think that the civilians who have come into this work, able engineers who have gone so far in this work, should be used, should be kept, should teach the younger generation all they know, pass it along, and that these great organizations that have been got together under the stress of war should not be dissipated and go back to their civilian employments without leaving with the country the benefit of all they have learned.

I think that the great manufacturing organizations should not be destroyed or allowed to fall into disuse. I don't advocate the building of great numbers of aircraft for military purposes. I don't think it is necessary. But I think that sufficient encouragement and employment can be given to the well-developed aircraft factories of this country to keep them in the aircraft business, to induce them to make every discovery, to do everything they can to promote the science of aircraft. The organization should be kept intact, and the men who are able and who have done this thing should be kept together as far as possible. It would be a small expense, and God knows it might be a great measure of economy some day.

Probably the loudest cheers of the evening were for Col. W. A. Bishop, Canada, who has an official record of having brought down seventy-five planes. A modest young man of twenty-four. After telling a bit about aviation in war, he had this to say about aviation in peace:

Speaking of the future of aviation, one can only say that aviation has been made by this great war. At the beginning of the war it was a dream of the pioneer of flyers that flying machines should help to scout and do other work, and they did at the beginning of the war, but no dreams that those pioneer flyers could possibly have had could possibly picture the wonderful development which aviation has had during the past four years.

I feel convinced—and really I have seen airplanes do some extraordinary things—I feel absolutely convinced that the future of aviation is not in warfare; it is in commerce and I think that the wonderful record, the science of flying has had will be equaled and surpassed in the next few years by the development of commercial aviation. The first startling thing will be the transatlantic flight, and as every man here knows that is not far off, not for one machine, but for many machines. At the end of another year I feel quite confident that scores of machines will have crossed the Atlantic.

And a great number of men here tonight will doubtlessly take that trip. This trip will without doubt be done not only in the big machines but in the small machines. Both of these types have their advantages for commerce. The general idea among the outside public seemed sometimes to be that the only machine fit for a commercial purpose is the big, many-engined machine. This machine undoubtedly has tremendous advantages in carrying weight, in going long distances, and by reason of its two, three or four-motor engines, may be more reliable, but the engines which have been turned out of late years in your country, in England and France and Italy, have shown us that single-engine machines may now be reckoned upon to be absolutely reliable, and that a person flying a machine with one engine, one of the good ones, may rely on that engine not to let him down.

Bishop Speaks of Progress

This is undoubtedly the biggest step that flying has taken, because in the past the people were very frightened of flying over bad country, continually worrying. I have done it myself, of landing in corn fields and like fields, woods and all sorts of things. Now with engines that one can rely on we feel absolutely confident that it will carry you through. The little machine will be cheaper in every way. It will, of course, not bring the same results with the one exception of speed, but it will always be the fast machine.

I think that it is an extreme case, but you might compare the big machine as you would

Here are the four army planes that made the coast-to-coast flight, as they appeared after their arrival at Mineola. They established a record for the distance, flying 4200 miles in 53 hr. actual flying time

compare an ordinary roadster to a bus, and I believe in the ordinary machine. I would certainly take it if I were going on a long trip from here to Chicago, preferring the roadster to the bus. The Atlantic will certainly be flown in the course of the next six months by more than one machine of the two, three and four-passenger class.

Now, your country is full of young, keen, fully developed, wonderfully trained pilots. These people must have employment, they wouldn't want to give up flying either; there is no necessity for it. The future of aviation in the commercial sense will need every one of those men and you are a very lucky country to have such wonderful men trained and eager to fly.

While H. Snowden Marshall, who investigated the aircraft situation, was expected by the audience to say a lot about his investigation, he said little in detail. He stated that things were not as bad as painted and that the aircraft work done was a most creditable achievement. He also urged that the experience gained through the progress made thus far be not lost through a slump in aircraft development.

Lieut. H. H. Emmons, who was in charge of aircraft production, cited figures that reflect very favorably on the efforts of those engaged in aviation work during the war. He said:

Statement by Emmons

For the eight years prior to 1916 the Army had ordered fifty-nine airplanes and had received fifty-four. During the year 1916 the Army had ordered 366 planes and had received 64. In other words, for the nine years prior to 1917 the Signal Corps of the Army had received the enormous sum of 118 airplanes. That was the equipment that they had had up to the date that we started this business and that was all that they knew about them. Now, from that we had to start with a program laid down by the joint army and navy technical board, calling for over 9000 training planes and over 20,000 combating planes, and you gentlemen who have made any of this material know what it meant to tackle a job of that kind.

Now you made 9000 of the training planes, you made the 16,000 training engines, and every one of them had been delivered and put into service before the armistice was declared.

On the combat engine side we were oppressed with a multiplicity of advice; as a result of which it was determined to put our main effort upon the Liberty engine, going into the arguments for or against it. I am simply going to call your attention to this fact, that on the 19th day of May the first stroke of the pen was made to design the Liberty engine, the first engine was built complete and delivered in Washington on the 4th day of July, less than six weeks. It was extended into a twelve-cylinder engine and the first one was built and passed the 54-hr. test by the 25th day of August of that same year and was pronounced a success and ready for production.

We started to produce that engine, which was rated at a horsepower of 330. When we had tooled and jigged up for it and gotten the factory ready and had produced several hundred of them we were told to increase the horsepower. It was boosted to 375, with the resulting changes in the tools and equipment. When we had made some 400 or 500 of them we received our final instructions from abroad, and I might say to you that most of the things you have felt disposed to criticize you will find were done by us because we were told by the authorities under whom we were working that that was what was wanted, and that we should do it.

We received our instructions from the other side that if we could produce an engine of 400 hp. or upward we would have the engine that would do wonders in 1917 and 1918. Many changes were required to get that larger engine. and on the 29th day of May, 1918, one year after this engine was started to be designed, we had passed all those difficulties, had engineered and developed it, put it into a manufacturing proposition and delivered into service over 1100 of them.

Now that is an accomplishment that never has been equaled in industry anywhere. Those of you who are familiar with the automobile business know that no automobile motor of any size or strength has ever been put into service without at least a year of experimentation and development on it. This Liberty engine had no such year of development before it was put into production, and it did not need it, for the reason that the design was proper when it was made. You have heard about changes on that engine. From the date it has been made until now there have been no fundamental changes on that engine. We have changed the oiling system, but there aren't any fundamental changes.

The changes that you have heard about are of two classes: We know those were required by the two increases in horsepower that I have told you of, and the other the manufacturing changes that always are discovered in the process of production. And these are all the changes that have been made on this engine during the time that it has been in production.

Now from the 29th day of May until the armistice was declared the production of these engines jumped by leaps and bounds, until, during the month of October, the production of Liberty engines was 3878, or over 150 for every working day in that month.

Otto Praeger, assistant postmaster general, told of the future that lay in the mail service for planes. He said great climbing ability and such things were not so much in demand as were landing ability and other peace-time qualifications.

Early in the evening flyers from overseas marched into the hall behind a "Spirit of '76" drum corps amid the aplause of the diners.

The meeting also had as a feature the presence of Major Albert D. Smith and others who at 5:30 o'clock the same afternoon completed a transcontinental flight begun Dec. 4 for observation and mapping purposes.

The banquet was presided over by President Frank H. Russell, of the association.

Annual Show Issue Coming Next Week

WORRIES OF IMPLEMENT DEALER

(*Concluded from page* 21)

nate properly with the equipment on the different machines it proposes to operate. This is an important phase of the whole situation and one worthy of more thought, not only on the part of the dealer and farmer but the manufacturer as well, and in my opinion will become increasingly more important. In regard to the relationship between the dealer, his machine and his customer, such a broad field opens up for discussion that I will touch upon it only briefly, because among other things it involves the matter of service with which we are getting every day on a basis of better understanding.

It becomes more and more apparent that in the development of these new problems the farmer is looking at the matter of power farming with increasing interest and favor, trying to run his farm as you would run your business and studying new ways and means of increasing the productivity of his farm. Their nearest point of contact in the solution of these ideas is the local implement dealer, who must in turn prove to the farmer that he has a real interest in his welfare and to do so must himself be equipped to assist him in this newer view of things; in other words, the dealer should know as much about farming as the farmer does and be ready to help him with the advice that is needed. Furthermore, a manufacturer looks with most favor upon the dealer who knows the needs and requirements of his community and who is willing to handle his tractor because he feels it will entirely fill such needs—who, after selecting his tractor, knows it and understands its construction and is wholly familiar with the work his machine is designed to do. He should know the soil conditions in which the tractor is to be used and be able to recommend to his customer the size of tractor and style of plows best suited to his conditions.

Sell Tractor in True Light

All manufacturers are anxious to impress upon the dealers the importance of not trying to oversell the tractor, but to represent the machine in its true light and forego the sales of a tractor, if necessary, when he knows it is to be put to use more severe than that for which it was designed. A tractor, being a mechanical thing, requires human attention, and it is no less important to be humane with a tractor than with a team of horses, for without human and humane treatment no tractor can long operate satisfactorily or successfully. The manufacturer, therefore, is desirous of dealing with dealers who have a keen realization of all these things, those who are best able to know what is meant by humane treatment of a tractor and see that it is given.

A tractor properly working is an asset to the user, but when broken down for any reason not only is it not an asset but it becomes a distinct liability, for crops are waiting to be put in and delay becomes a nightmare to the farmer. He should be able to get in immediate touch with the dealer who sold it to him, and that dealer should so completely understand the machine as to render expert service or see that such service is rendered and be able to furnish him from his floor whatever spare parts may be required in order to reduce to a minimum the length of time of the machine's enforced idleness. From the very nature of the business, this is the only type of tractor dealer who can succeed.

JACKSON TO MANAGE AUTO BODY

Lansing, Mich., Jan. 10—W. V. Jackson, vice-president of the Briscoe Motor Corp., Jackson, Mich., will assume the permanent management of the Auto Body Co. in this city Jan. 15. A. C. Stebbins, vice-president of the Auto Body Co., has been acting as general manager until a suitable man to fill the vacancy could be found.

Mr. Jackson has been vice-president of Briscoe two years. He was formerly general manager of the A. O. Smith Corp., Milwaukee, Wis., being with that concern five years.

Line Control of Tractors

Principle of Steering Horse as Applied to Farm Machine

CHICAGO, Jan. 11—"If it is desirable and convenient for the operator to be always on the tractor, then it is desirable and convenient for the farmer to do all his work riding on his horses," was the argument of A. H. Wyatt, president and general manager of the Automotive Corp., Fort Wayne, Ind., which aroused interest at the monthly meeting of the Mid-West Section of the Society of Automotive Engineers last night.

Mr. Wyatt's paper was entitled "Line Control and Power Steering as Applied to Tractors," and consisted chiefly of a discussion of these features as developed in his design. Mr. Wyatt says that his tractor is just as docile and observant of the rules of the rein as is a horse. Every move the tractor makes is controlled by reins. Two reins being used to steer, operate the clutch and control the engine speed, and a third is used to shift the gears.

Plows 50 by 150 ft.

The success of the company's design is demonstrated by the claim that it is possible to plow a fenced-in plot of ground, 50 ft. by 150 ft., and plow almost every square foot of the plot. Excerpts from Mr. Wyatt's paper follow:

"Much is expected and demanded of the modern tractor under a wide range of conditions. It must be practical, economical and adaptable to the individual requirements of each farmer, but all else being equal the thing most desired by every farmer is one-man operation under all conditions. This can only be accomplished when the operator is seated on the implement or vehicle being operated by the tractor and from which position the operator has absolute control of the tractor itself. I maintain that the most practical means of thus controlling the tractor is by the use of flexible lines. It, therefore, follows that the tractor must be power steered, which is the subject of this paper.

"In developing our line control I believe that we have progressed a great deal further in the direction of one-man operation and line control than anyone else, which is confirmed by the fact that every operation of our tractor is controlled by lines.

"By use of the line control it is possible for the operator to go back any desired distance from the tractor and have as perfect control of every operation of the tractor as if he were sitting on the tractor itself and at the same time having within easy reach all levers of the implement or vehicle that is being handled, or operated, thus obviating the necessity of having one man on the tractor and one man on the vehicle or implement.

"While some tractor implements are so constructed that they can be operated from the seat of the tractor, there are a great number that require the operator to occupy the seat on the implement. On the other hand, it is always a decided advantage for the operator to have all his work in front of him at all times, even though the implement may be operated from a position on the tractor and this advantage is always made possible by the use of our line control.

"For example, we accelerate or retard the speed of the motor. We steer to the right or left. We throw the clutch in and out and change all gears. In other words we start, stop, back up, turn to the right or left and vary the speed of the tractor, all by the use of lines.

"Before proceeding further with a discussion of the many advantages in favor of one-man operation and our line control, it will perhaps interest you to know something about our system of mechanism, whereby, we obtain absolutely efficiency by the use of lines. I shall therefore, attempt to describe as briefly and clearly as possible, the component parts of our tractor and their relation to each other.

"First of all, the tractor is steered by power. The power is taken from the camshaft of the motor at the rear end between the last cylinder and the bell housing of the fly wheel, from there through small bevel gears to a splined shaft upon which is keyed two 2-deg. leather cone clutches, a collar between them in which operates a fork that holds the clutches in a fixed position by the use of tension springs while they are not in use.

"The shaft upon which is fastened the shifting fork is fastened to a lever at one end that works at right angles to it and passes through a hole in the clutch operating lever, which lever has a T-shaped head, the driving lines being fastened to the extreme ends of the cross head on this lever, making it possible to steer the tractor no matter in what position the clutch operation lever may be.

"On the shaft upon which are keyed the two small clutches and so arranged that the clutch operates in them are two bevel gears which are constantly in mesh with a third bevel gear; these gears are loose on this shaft and do not turn until the clutch is engaged in them. As soon as the clutch is thrown into either gear this sets the entire steering mechanism into operation and the direction in which it turns depends upon which clutch is engaged.

Gear Keyed on Shaft

"The third bevel gear, which operates in connection with the other two, is keyed to a shaft that runs to the rear of the machine. On the other end of this shaft is securely keyed a worm which operates in a worm gear, making it irreversible, on the bottom of which is a pinion operating in a segment the full width of the tractor. The segment is on the sub-frame or truck, which is pivoted close to the axle of the tractor, and the sub-frame is supported on the other end by two small trailer wheels.

"Return to the T-shaped clutch operating lever. At the secured end is an eight-tooth ratchet. Upon the other end of this

One of the motor car floats which took part in the New Year's parade in Los Angeles

ratchet shaft is keyed a star-shaped cam with four points having eight positions in all, one for each tooth in the ratchet and one for each space between the teeth.

"The clutch lever operates on this cam, the other end of which is connected to a dash pot which allows the clutch to be operated at a speed of three seconds every other time the lines are pulled back. The first four inches of pull on the lines retards the motor speed, the balance of the pull operates the clutch, every pull alternately throws the clutch in and out, out when the clutch lever is on the point of the star cam and in when it is between points.

"The gears are shifted by the use of two cams in the same general manner in which the clutch is operated, and while we recommend the use of the third line for shifting gears, at the same time it can be connected to the two driving lines, in which case greater care is required in operation, and it also somewhat complicates the device.

Cams Work Together

"The cams on the gearshifting device work together at all times and are so worked out that when one lever is being operated the other is held in a stationary position, and it is also arranged so that one lever cannot even be engaged until the other is in a neutral position.

"It is very difficult to clearly describe the operation of our line control. Although apparently quite complicated, as a matter of fact the whole device weighs less than 25 lb. and is so simple that at first glance it is surprising that someone has not conceived the idea long ago.

"Since early in July of last year we have made many tests in all varieties of soil and have demonstrated to our own satisfaction and before thousands of spectators in various communities throughout the middle states that our system of line-drive control and one-man operation is both economical and practical and that through its use the extra man is dispensed with in each and every operation of the tractor.

"The advantages in favor of line control over lever and wheel control and hand steering are many and varied. In order to lay them before you briefly and clearly I have grouped them as follows:

"1—It permits of one-man operation at all times.

"2—The operator always has all of his work before him.

"3—The operation of the tractor, including steering, requires practically no effort on the part of the operator.

"4—Simplicity of operation.—It does not require special instruction, or a skilled and high-priced mechanic. A woman or boy over ten years of age can operate the tractor as easily as a strong man.

"Practically every operation of the tractor is the same as that necessary in driving horses and requires no more effort. The lines are always loose except when operating the clutches or shifting gears.

"After the motor is started the operator takes the lines in his hand and walks back to the plow or other implement, which has previously been attached to the tractor, regardless of the distance. He takes the seat on the implement and pulls the lines as far back as they will go, which operation releases and pulls the lines as far back as they will go, which operation releases the clutches. With the third line he shifts the gears in the transmission and as the clutch is engaged the tractor moves forward or backward in the direction desired.

"5—Comfort.—The operator is always away from the heat of the motor, out of the dust of the tractor and subject to no more rough riding than is the case when the implement is being pulled by horses.

"6—By line control, there are no extensions to make as is the case when the steering rod is lengthened to the required distance in other models of one-man operation. On the other hand, the lines can be made any length and the operator can go back and sit on the vehicle or implement without making the slightest change, whatever. He can, likewise, go from that position and occupy the seat on the tractor immediately without making any change. The tractor can be operated as easily from the top of a load of hay as from a plow or the tractor itself.

"7—The steering gear being irreversible, is always positively locked and can be set to go in a straight line or any circle down to 12 ft. in diameter.

"8—The motor speed and consequently the tractor speed is always under the instant control of the operator. A slight pull on the lines will retard the speed of the motor from 900 r.p.m. down to 100 r.p.m. or any intermediate speed.

All Gears Shifted

"9—All gears are shifted. The four positions, two forward, neutral and reverse, are controlled by the third line just as easily as if the operator had his hand on a solid lever. A signal on the side of the gearshifting cams always indicates the position of the gears.

"10—The seat for the operator can be changed to any position as the circumstances may require. In plowing the operator sits directly behind the furrow wheel. In loading hay he goes up with the load. In binder operation he occupies the binder seat from which position he can manipulate all necessary levers. The same is true of mowing machines, manure spreaders, harrows, disks, seeders, etc.

"I will conclude by stating this fact: If it is desirable and convenient for the operator to be always on the tractor, then it is desirable and convenient for the farmer to do all his farm work riding on his horses."

Estep Died "On the Job"

A LETTER from Capt. W. P. Stephens incloses the following extract from the Stars and Stripes for Nov. 29, 1918, which was sent in by his son, Private Herbert Stephens. Ralph Estep was at one time editor of MOTOR AGE and subsequently was advertising manager for Packard. The fact that he had been killed four days before the armistice was told in an earlier issue, but details were lacking. After working about Verdun and in Serbia two years as a war photographer, as well as on this side in the cantonments, Mr. Estep was serving in the Signal Corps of the A. E. F. Says Stars and Stripes:

"In the dark room of a photographic laboratory near Paris this week, two sensitized gelatine plates gave up the secret of the last minutes of Lieut. Ralph Estep, who was killed within sight of Sedan after he had faced death almost daily for three months so that millions of people could see through the eye of his camera what modern war is like.

"Gradually taking on lights and shadows, the two plates showed the crest of a barren hill, with shells bursting and casting up great spouts of earth and, just beyond the crest, a valley black with the shadows of the late afternoon; a valley that holds Lieut. Estep's grave.

"Lieutenant Estep had snapped the photographs a few moments before another one of those big shells burst and left him lifeless at the side of his camera and plate pack. That was about 5 p. m. of Nov. 7, three days before the last guns of the war were fired. A dozen pencilled lines in his notebook, titles for the dozen pictures he had taken just before he was killed, make complete the story that the last photographs tell. He had written titles for every plate by numbers, and plates Nos. 1, 2, 3, 4 and 5 showed the platoon forming for the reconnaissance. Plate 6 pictured a 'slight brush,' the first sight of the enemy. The dramatic climax was shown in plates 11 and 12, his last ones, and in his notebook the record stands:

"'11 Burst Killed
"'12 Men crawling

Picture Shows Shell Burst

"The pictures were all taken on a cloudy day and are full of shadows, with little contrast, and No. 11 shows only the edge of the hill and the huge, funnel-shaped shell burst. The words 'killed' probably referred to what he had seen happen to the men just ahead of him. Picture No. 12 shows another huge column of flying earth with a line of doughboys dimly silhouetted against the darkness of the valley. The last writing on the page—the lieutenant's last words—were simply 'Nov. 7 Pack 46.' Lieutenant Estep had reloaded his camera just before he fell."

In sending the clipping Private Stephens says: "From all events he certainly died game, working right up till the last minute; there was a lot of this done, and in many cases the real stories of these men will never be told, for this reason the layman does not realize that a soldier does not necessarily mean a man who rushes madly ahead with either a loaded rifle or a bayonet and has a hand-to-hand fight with the enemy. For example, the infantry and artillery would be entirely lost without the work of such men as Lieutenant Estep, and in a good many cases these men are exposed to much greater danger and hardships and stand a much smaller chance of being recognized when it comes to writing up the story of the battle, as naturally their work is not as spectacular as that of a body of men working together."

Growing with Your Town

Dealer and Garagemen in Constantly Changing Field—Progress Must Be Made if Sphere of Usefulness and Service Is to Be Felt

By Charles C. Sherlock

THE population of any community is constantly changing, even though it appears to reach about the same figure in each census report. Consequently, the field for the retail merchant, whether he be a grocer or garageman, is a constantly changing field.

New people are coming into the community almost daily; old residents are leaving for other places of activity. This constant change imposes a duty upon the retailer which he is often slow to recognize.

It means that he must be constantly growing with his community, if his sphere of usefulness and service is to be felt. He must not content himself merely with a few meager advertisements grudgingly placed in the newspapers. He must inject personal force into his publicity and he must keep constantly at it, or he will lose the trade of the old residents and fail to get that of the new.

Let me illustrate: In one of our midwestern cities there was a young man who started out in life as a taxicab driver. He was genial, a good mixer and he had the elements of a successful business man in his make-up.

People needing the services of a taxi liked to have Jones—we will call him that—sent in response to their call, because he could be depended upon.

In the course of time, Jones decided to go into business for himself. He had an ambition to maintain a first-class garage on a business basis, but he did not feel that he could afford to let the business he had won in the taxi trade slip through his fingers.

Capital Used for Most Good

So he stayed with the taxi business. *He had the good sense to put his small capital where it would do the most good,* although his heart was somewhere else. Many men of mature years and supposedly mature judgment do not have the business sense or the strength of will, to do this.

Young Jones soon became a real force in his community. His taxi business grew by leaps and bounds, until he had twelve cars.

"People would use taxis more if it did not cost so much," he reasoned. "But we have to have high rates because they cannot be kept busy all the time. If I can establish a popular price and thereby keep my machines busy all the time, I will be better satisfied and so will my customers."

So he purchased some small machines and advertised taxi service at $1 an hour or 50 cents a round trip from the residence district to the business district. Many women who were going shopping availed themselves of this opportunity to get quick service at that figure. And Jones' machines were busy all the time.

It was then that he was faced with the necessity of opening a garage of his own. His machines had reached the point where they needed repairs. He had to have storage room for them.

"I will build a large garage," he said, "so that I can have room for the storage of outside cars. I also will install a good repair department, so that my men can be kept busy working on outside jobs when they have finished with my cars."

A garage was built and Jones was able to do his own repair work at cost, which amounted to a considerable sum for one having the amount of work that he did. His profits on the outside business that came to his shop made him a handsome profit on the investment.

At the present time, he has also reached out and taken over an accessory business, which dovetails in well with his garage and taxi service.

Now this little story, which I have taken from my own observation of a boy in my own town, sounds like easy and light reading. Some will say that Jones was lucky, because he always had plenty of business coming his way, but they do not know Jones.

Business never came his way; he went out after it, and that is the burden of this discussion.

How can a garageman go out after business? How can a fellow in a small town do anything like Jones did?

There are several ways in which a garageman can go out after business and keep it coming his way, and while the small town dealer has a different problem to solve, he will have to adopt the fundamentals adopted by Jones before he can solve any business-getting problem.

Every one of Jones' methods can be summed up in one idea: *He studied human nature and he catered to its whims and desires.* After all, that one secret is at the bottom of every successful one-man business.

Jones studied human nature and then he catered to its whims and desires. This is how he made good in the taxi and repair business.

For one thing, people like to be noticed. Jones never failed to notice what was going on around him and he made good use of his observation.

If a stranger called his taxi, he would say: "Are you a stranger here? I do not recall meeting you before and I know a great many people here."

If a man was a newcomer in the community, Jones would make him welcome. "You'll like our city," he would smile, "It's the best in the world! We keep hustling here!"

Then, "Do you own a car?" If the customer replied in the affirmative, Jones would make mental note of it and back at his garage he would put that man's name down on the card file he kept of customers and prospects, and he would state whether or not the man owned a car.

Suppose the fellow did own a car. Then Jones would mail him out some literature explaining the location of his garage and the superior service which was rendered there for all kinds of repair work.

If the man did not own a car, his name went down on the list just the same, for he was a taxi prospect to be sent follow-up letters from time to time concerning the taxi service which Jones could render, even in emergencies.

Then, Jones kept an eye on the list of licenses issued on new cars. Every new car owner was listed and tabulated. If, by chance, Jones discovered the stranger's name on any of these lists, he promptly would write him a letter.

Jones, the Taxi Man

"You'll remember me," he would say, "I'm Jones, the taxi man. Now that you have a new car you may need repairs quickly some time. I'm just as prompt with my repair work as I am with my taxi business."

But Jones did not stop there. He was constantly making his publicity felt among the residents of his community because he injected the personal factor.

He remembered faces and names, and when he met people he had a word of greeting for them. As I said before, he was a good mixer. And he could hold trade, once it came to his shop. He didn't have dissatisfied customers because he saw to it that they got prompt, efficient service when they called on him.

He watched the removal notices in the local papers and when he found that a customer had moved from one end of the town to the other, he wrote a letter of congratulation on their new home, "Do not forget that Jones' service will be just as prompt and efficient in the future, as it has been in the past."

He noticed that new owners of cars invariably had trouble with their tires, most of them carrying too much pressure. He got out a tester with his name stamped upon

it and sent it to new car owners with his compliments. He would, in his letter, offer a word of explanation to them as to what various tires could conveniently carry in the way of air pressure. Then, he would say, "I trust that you will have only pleasure with your new machine but keep in mind that Jones' service is just as thoughtful and considerate as it is possible for human ingenuity to make it. Jones' rates are lower because of the immense repair work he does for himself."

Advice Made Free

For some time, he ran a notice at the top of his newspaper advertising, "If you are troubled with your car and want to ask questions about something you do not understand, call Jones. His service is free in this connection."

This almost always resulted in new business, when people did call to ask him questions concerning the operation and care of their machines.

Jones became a real, vital power in his community because he performed real, lasting, beneficial service to his patrons. He did not look always at the dollar, when he was dealing with people, and that is why they liked him.

"Here is a man who is an artist," they would say, "He loves his work and he is anxious to do all that he can to make car driving a pleasure to us. A mighty fine fellow!"

That is why Jones had business coming his way all the time. Some people will call it luck, but in the last analysis there was no luck in it at all. It was merely the knack of learning to please people in the way that they like to be pleased.

Now, how about the small town dealer? He cannot copy Jones' methods in detail because his field is not the same as that which Jones served. But the small town dealer has only to follow the fundamentals set down by Jones and he will prosper.

People in small towns are no different, so far as human nature is concerned, from those in the city. They like hustle and enterprise. They like to be treated with consideration; they like to have "salve" and they like to be noticed. *The dealer who sits down in his office and waits for trade to come his way may spend most of his time waiting.* Business is something which we must go after. No man can live on the business that comes to him.

Must Go After Trade

Just as we had to go across the ocean to lick the Kaiser, so must the business man go out into his community to get trade; he will never become a success until he is able to grow with the people in the community.

Farm-Lighting Plants Made by American and Cushman

ISOLATED lighting plants manufactured by the American Battery Co., Chicago, range in capacity from eight to one hundred and twenty 16-cp. lamps for the generator alone and on the battery from four to thirty-six 16-cp. lamps. These are 30-volt outfits with a single-cylinder engine belted to them and the engines are water cooled with heavy flywheels. The generators are wound to develop up to 45 volts to overcome back pressure of the storage battery. They can be compound wound when so specified.

The speeds range between 1400 and 2200 r.p.m., depending upon the size. A field rheostat and sliding base are supplied with all machines.

The switchboard includes an enameled slate board, ammeter, voltmeter, voltmeter switch, underload circuit-breaker and end cell switch or regulating rheostat as may be specified, two double-pole switches with fuses, switchboard supports and so on. The switchboards are wired up ready for connection to the storage battery and dynamo.

The storage batteries are American make of sixteen cells in glass jars. As the storage battery and generator are relatively large as compared with the engine, the generator may be driven as a motor for starting the engine. Appliances designed to automatically take care of this feature are incorporated.

One of the sets featured by the American is the 200-watt set known as 211. In this the voltage ranges from 15 to 20, the capacity of the generator alone is equal to the operation of eight 16-cp. lamps of 12 volts, but with a storage battery the capacity is equal to fourteen 16-cp. lamps. The engine used in this set is a 1-hp. water cooled portable style engine which can be used for a variety of purposes, as it is belt connected with the generator.

The storage battery has six cells and has a capacity for five 16-cp. lamps for 6 hr.

The set complete weighs 600 lb. and, ready for installation, costs $165 with hard rubber jars or $160 with glass jars. In addition 60 and 110-volt plants may be had.

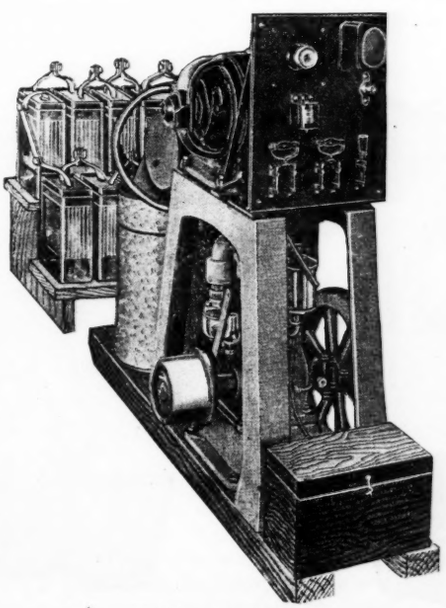
Cushman Electric Lighting Plant

Cushman plants are all 32-volt and are in two generator sizes. One size is 1000 watt and is capable of handling from 20 to 100 lights, depending upon the size of the battery.

Four sizes of battery are offered—80-amp., 100-amp., 120-amp. and 180-amp.

A feature of the Cushman system is that the engine is mounted on a wheeled truck for easy portability, so that it may be used for purposes other than operating the generator. It is belt driven, and removal of the belt permits the engine to be used for operating washing machines, separators and so on. The engine is 4 hp. and weighs 350 lb. It is equipped with a Schebler carbureter and has a friction clutch. It is water-cooled, throttle-governed, and there is only one place to oil. The speed of the engine is adjustable while in motion.

For larger size plants, engines up to as high as 20 hp. may be obtained. The generator with the 4-hp. outfit is equipped with a sliding base rail for tightening the belt, the batteries are of the sealed top type and may be had in either glass or rubber jars. A slate switchboard is provided, carrying a voltmeter, ammeter circuit-breaker switches for batteries, generator and lights, fuses and other equipment.



One of the Cushman farm-lighting plants

A self-starting attachment may be obtained, which relieves the compression at the intake valve and closes the air intake of the carbureter, so that when the starter button on the switchboard is pushed the generator is converted into a motor and, the compression on the engine being released, the engine starts easily. The oil is turned on automatically by the engine starting. Sixty and 110-volt plants are furnished to meet larger demands.

A very compact unit type of Cushman powerplant is produced, but as it is belt-connected, the engine very easily can be slid out from under the generator and thus make it available for other purposes.

A small plant to meet limited requirements is the Cushman Junior. It is capable of giving fifteen lights of the storage battery alone, twenty-five lights from the generator, or total combined capacity of forty lights. It consists of sixteen glass cells of 60-amp. capacity, 1½ kw. four-brush generator and switchboard complete with voltmeter, ammeter, circuit-breaker, rheostat and necessary fuses and wiring. The 4-hp. Cushman engine or any other can be used as the outfit is belt-driven. The whole outfit except the engine is mounted on a hardwood portable base.

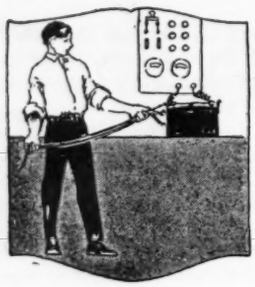
GOOD ROADS BONDS BARRED

Lansing, Mich., Jan. 10—Michigan must amend her constitution before her voters can authorize a good roads bond issue, according to the attorney-general. Agitation for such an issue, ranging in estimated amount from $20,000,000 to $75,000,000, was inspired largely by the examples of Illinois and Pennsylvania with their $60,000,000 and $50,000,000 good roads issues respectively.

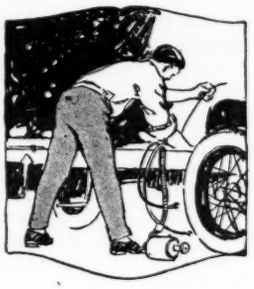
Michigan's trunk line system already contains 4786 miles of highways, and it is estimated that 2000 miles should be added to fill in the gaps.

NEW TRANSMISSION MADE

St. Louis, Mo., Jan. 11—The National Tool & Mfg. Co. of this city, is building three new models of motor car transmissions, designed for small, medium and heavy types of passenger cars. Samples will be shown for first time at New York.



Electrical Equipment of the Motor Car



By David Penn Moreton & Darwin S. Hatch.

Editor's Note—Herewith is presented the 129th installment of a weekly series of articles begun in MOTOR AGE, *issue of June 29, 1916, designed to give the repairman and motorist the knowledge which will enable them to care for and repair any and all of the electrical features of the car, no matter what make or model it may be.*

The first half of this series has been published in book form by the U. P. C. Book Co., Inc., 243-249 West Thirty-ninth street, New York, and is sold at $2.50. The remainder of the series will be published as a supplementary volume.

Part CXXIX—Wagner Electrical Systems

A WAGNER installation on a Saxon model B-5-R is shown in Fig. 665. In this installation the motor is mounted above the generator and a Bendix pinion on the starting motor shaft engages a gear on the generator shaft. The generator is driven by a silent chain. The mounting of the ignition distributor is shown clearly in the figure.

Wiring of Studebaker Series 18

A perspective view of the installation of the Wagner system on the Studebaker Series 18 model is shown in Fig. 666. This is a two-unit, 6-volt, single-wire system with the positive side of the battery grounded. A view of the electrical installation on the engine is shown in Fig. 667.

From the junction box the wires run to all the various parts of the electrical system. The junction box carries the fuses and the whole thing is inclosed in a housing for protection. The resistance used in dimming the headlights is mounted on the outside of the junction box. The internal connections of the various circuits in the junction box are shown in Fig. 668.

The ignition system, which is manufactured by the Remy Electric Co., consists of the coil, the combined timer and distributor and the spark plugs. The ignition is shown installed in Fig. 669. The current for ignition is drawn from the storage battery when starting and from the generator when running. The combined timer and distributor should be inspected occasionally to see that no oil or dirt has accumulated inside or other foreign matter between the terminals on top of the distributor. Any such accumulation should be cleaned out carefully, as its presence will cause the contact points to wear away rapidly.

If inspection of the contact points shows that the surfaces of contact are flat and have a frosty appearance, this is an indication of perfect condition. If the contact surfaces appear very rough or pitted, they should be smoothed flat. After smoothing off it is necessary to readjust. This work should be handled by an experienced man.

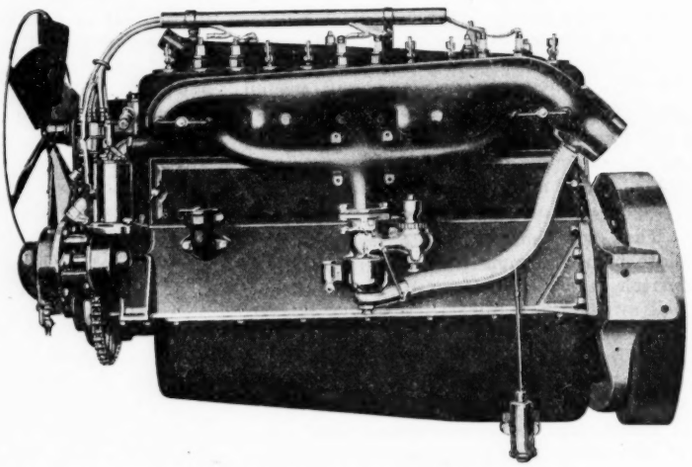


Fig. 669—Remy ignition installed on a Studebaker engine

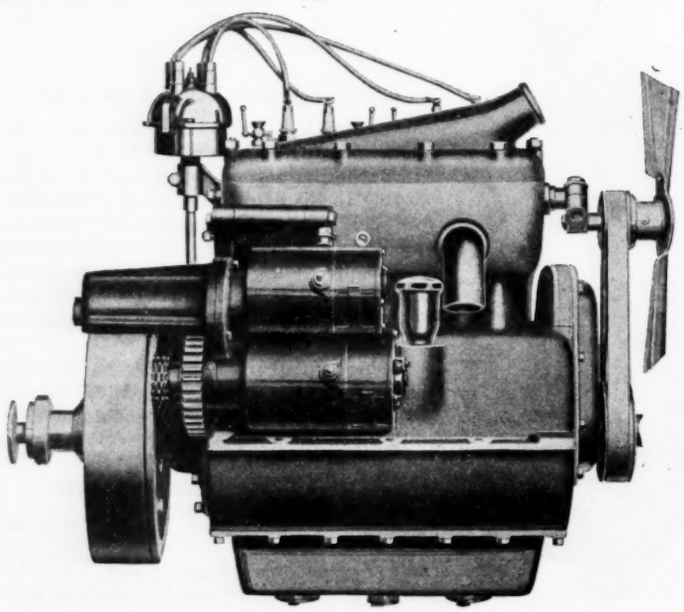


Fig. 665—Wagner installation on Saxon B-5-R

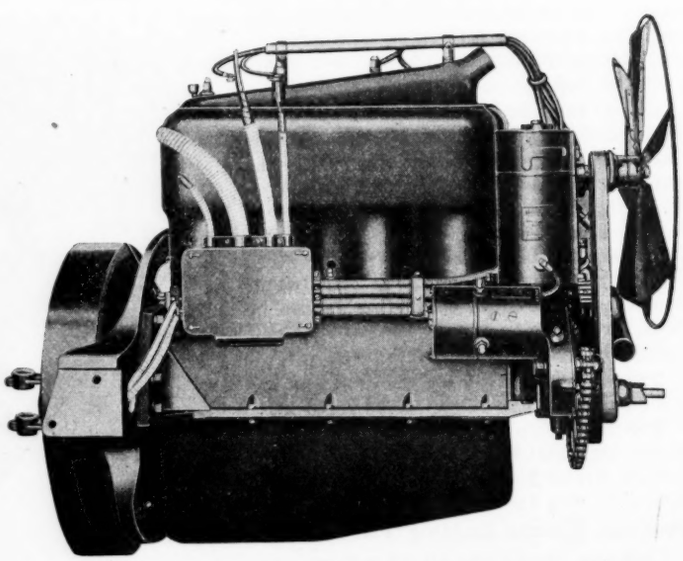


Fig. 667—Wagner installation on Studebaker car, showing generator, starting motor and junction box

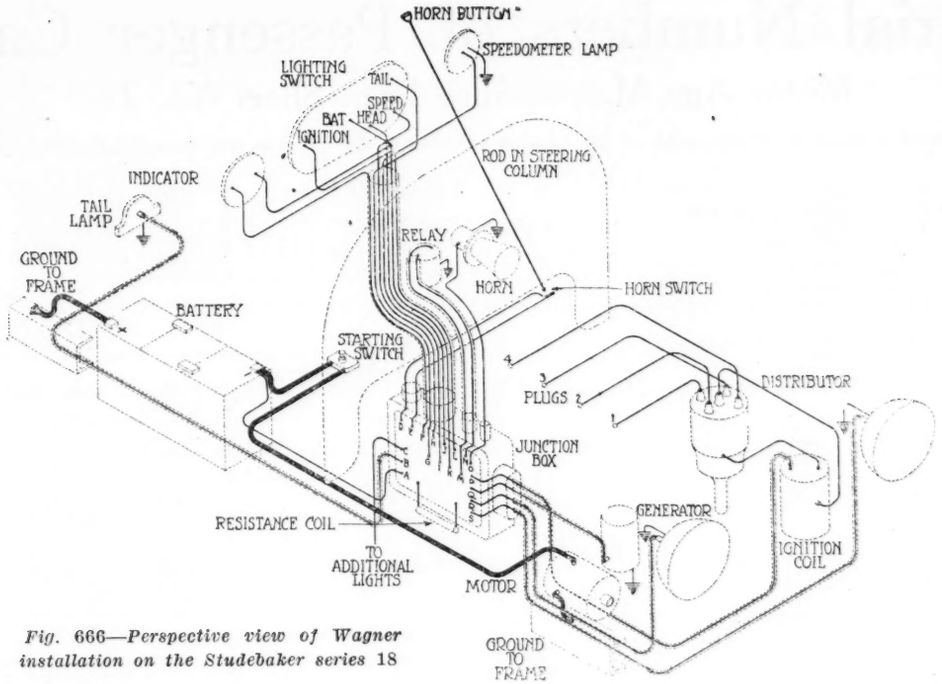


Fig. 666—Perspective view of Wagner installation on the Studebaker series 18

The grease cup which lubricates the distributor shaft should be given a single turn about once every 2,000 miles.

To determine whether the ignition in any cylinder is in good operating condition, remove the wire from the spark plug and hold it by the insulation about ⅛ to ¼ inch from the body of the spark plug. If the spark jumps from the wire to the spark plug body, the ignition up to the spark plug is in good order. To test the plug, remove it from the cylinder and re-attach the wire to it. Then clean the points of the plug and see that the gap between them has been corrected to the proper width, .025 inch. Lay the spark plug on its side on the cylinder and start the motor. If the plug is in good condition, you will see a spark jump the gap between the joints. If the spark does not jump the gap the plug may require cleaning. Oil and soot covering the parts adjacent to the points will short-circuit the gap and kill the spark. To clean the spark plug use a tooth brush and gasoline. After the spark plug is cleaned repeat the operation, and if the spark still does not jump the gap a new plug is necessary.

Unless you have completely overhauled the engine, it ordinarily will not be necessary to readjust the timing of the spark. But if it has been necessary, in making repairs, to disturb the relation between the two bevel gears which drive the distributor shaft, it is necessary to retime the engine, which work should only be done by an experienced man.

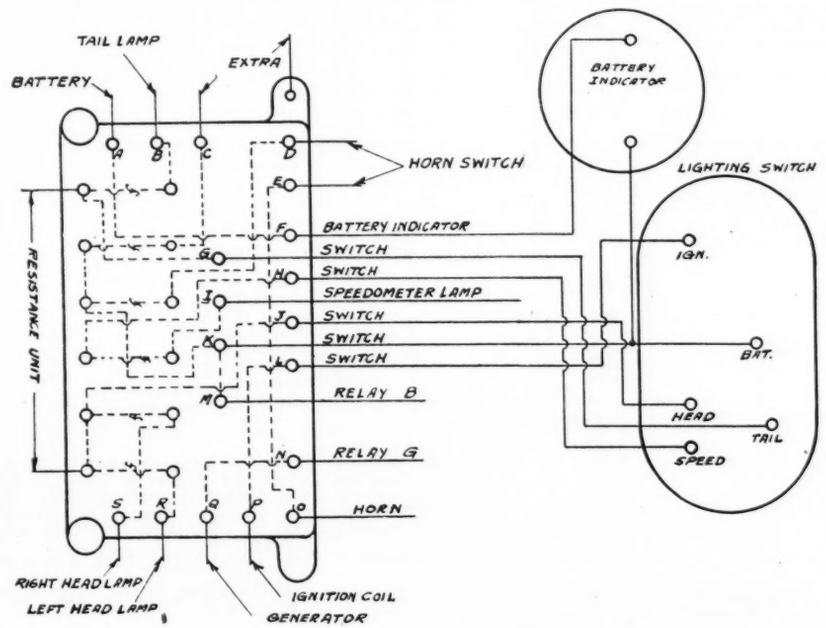


Fig. 668—Internal connections in junction box used on Studebaker

USED CAR MARKET REPORT

Chicago, Jan. 10—In the nineteenth edition of the National Used Car Market Report the Chicago Automobile Trade Association shows "as is" sales from June 21 to Nov. 21 and gives appraisal prices for December, January and February. Bell and Templar have been added to the long list of car names. No figures are given for Bell, as only a 1919 model is listed. The same applies to Templar, of which 1919 touring and roadster models are listed.

1918 BUSINESS IN YAKIMA

Yakima, Wash., Jan. 10—The motor car business during 1918 in this city, according to a survey made of the nineteen establishments here, shows $2,320,898 was paid for cars, trucks and tractors alone. Over $1,000,000 was spent for tires and other accessories, and over $2,000,000 for gasoline, the total investment being over $5,000,000. Dealers say these figures are conservative, though they represent a 75 per cent increase over the business of last year. The amount in the Yakima valley spent for cars is about 15 per cent of the estimated fruit crop returns of this season and is greater than the total amount given to war relief and loaned to the Government for war purposes.

Licenses Issued

Yakima county issued 7665 licenses of all sorts, as compared with 5345 the previous year. A noticeable thing, dealers say, is the demand for trucks and tractors. Tractors are coming into common use on the larger farms and trucks are used for short hauls of crops instead of the railroads and also for bringing produce to a railroad center.

In all 22,911 cars, a majority of them new, were sold during the year. Without an exception dealers are ordering more cars for the coming season than were disposed of by them during the last twelve months.

Serial Numbers of Passenger Cars

Motor Age Maintenance Data Sheet No. 21

One of a series of weekly pages of information valuable to service man and dealer—Save this page

ALLEN

Year	Model	Cyls	Price	Serial Numbers
1914	40	4	$1395	2000-2753
1915	34	4	895	3499-5233
1916	37	4	795	6000-15631
1917	Classic	4	850	
1918	41	4	1095	18000-21000

AMERICAN

Year	Model	Cyls	Price	Serial Numbers
1917	A	6	....	1-250
1918	B	6	....	251-1000

ANDERSON

Year	Model	Cyls	Price	Serial Numbers
1914	100-A	6	$1295	1-1100
1915	100-A	6	1345	1100-2600
1916	200-A	6	1435	2600-4200
1917	300-A	6	1550	4200-6400
1918	400-A	6	1435	6400-7000

APPERSON

Year	Model	Cyls	Price	Serial Numbers
1913	45	4	$1600	4000-5999
	55	4	2000	
1914	45	4	1785	6000-8499
	45-58	6	2200	
1915	40	4	1350	8500-10500
	45	6	1485	
1916	6-16	6	1550	10501-12000
				15000-16000
	8-16	8	1850	12001-13000
1917	6-17	6	1750	16001-17000
	8-17	8	2000	12000-13000
1918	6-18	6	....	17000 up
	8-18	8	2550	18000 up

AUSTIN

Year	Model	Cyls	Price	Serial Numbers
1914-15	66	6	$4000	1400-6075
1915-16	77	6	6000	FO12-F1045
1916-17	66	6	3600	C1003-C2862
1918	12-Cyl	12	3750	C1003-C2862

Numbers on instrument board

BRISCOE

Year	Model	Cyls	Price	Serial Numbers
1914-15	....	4	$785	100-4000
1916	4-24	4	585	15000-19999
	4-38	4	750	5000-14999
	8-38	8	950	
1917	4-24	4	685	20000 up
1918	4-24	4	725	

Numbers on 1914, 1915 and 1916 cars on heel board of front seat. Later 1917 models have numbers on dash plate

BUICK

Year	Model	Cyls	Price	Serial Numbers
1912	34	4	$900	
	36	4	960	
	28	4	1075	
	43	4	1800	
1913	24	4	1050	
	30	4	1285	
	40	4	1650	
1914	B24-25	4	1050	
	B55	4	1985	
1915	C25	4	950	
	C37	4	1235	
	C55	6	1650	
1916	D45	6	985	
	D55	6	1485	
1917	D4	4	665	
	D6	6	1020	
1918	E-6-45	6	1265	
	E-4-35	4	795	

All Buick dealers are in a position to furnish sufficient information to dealers regarding the models of each Buick car and the year in which it was built. If in doubt it is suggested that the nearest Buick dealer be applied to for the information desired

CADILLAC

Year	Model	Cyls	Price	Serial Numbers
1912	40	4	$1800	61006-75000
1913	40-50	4	1975	75001-90018
1914	40-50	4	1975	91005-99999
				A1-A5008
1915	51	8	1975	A6000-A19001
1916	53	8	2080	A20000-A38003
1917	55	8	2240	55-A1-55-S2
1918	57	8	2805	57-A1 up

Number on left front of engine in four-cylinder models. Number back of the right cylinder block on eights. For 1917 and 1918 the figures in front of letter indicate type of car, the number following letter the number of engine for that particular letter. There are 1000 numbers for each letter of the alphabet

CASE

Year	Model	Cyls	Price	Serial Numbers
1912	M	4	$2050	15000-19000
1913	N	4	1500	19001-22000
	O	4	2200	22001-22750
1914	O	4	2300	22751-23251
	R	4	1250	23252-26333
1915	R	4	1350	26334-28340
1916	T	4	1090	28341-31350
1917	T-17	4	1190	31355-32354
1918	U	6	1875	32355 up

In 1915 Model R two sizes of engine were used, some 3¾x4¾, others 3⅞x4¾. The 3⅞ in. engines were in cars numbered upward from 26330

CHALMERS

Year	Model	Cyls	Price	Serial Numbers
1912	30	4	$1500	4901-29166
	36	4	1800	
	54	6	3250	
1913	30	4	1600	24301-34499
	36	4	1950	
	54	6	2400	
1914	24	6	2175	34500-38499
1915	26	6	1650	38600-45799
	29	6	2400	45801-47300
	32A	6	1400	47500-49599
1916	6-30	6	1050	50600-55699
	6-40	6	1350	55700-75699
	6-48	6	1550	75700-85699
1917	6-30	6	1090	90000-94000
1918	6-30	6	1535	82000 up
				94000 up

1915-6 numbers on side or cross members of frame under front floor boards. 1916-7 numbers on left front horn of frame

CHANDLER

Year	Model	Cyls	Price	Serial Numbers
1913	14	6	$1785	1-550
1914	15	6	1785	551-2500
1915	15B	6	1295	2501-4000
1916	16	6	1295	4001-15000
1917	17	6	1295	15001-35000
1918	New series	6		35001 up

Number on front engine arm

CREVROLET

Year	Model	Cyls	Price	Serial Numbers
1913	C	6	$2100	
1914	H2	4	750	
	H4	4	875	
	L	6	1475	
	C	6	2500	
1915	H2	4	750	
	H4	4	875	
	L	6	1425	
1916	490	4	490	
	H4	4	750	
1917	490	4	490	
	F5	4	800	
	D	8	1385	
1918	490	4	635	
	FA	4	935	
	D4	8	1385	

As Chevrolet cars are numbered by manufacturing zones it is not possible to reproduce the numbers in such a way as to be of use to the dealer. In case of doubt write the Chevrolet Motor Co., 690 West Fifty-seventh street, New York

COLE

Year	Model	Cyls	Price	Serial Numbers
1912	40	4	$1885	5000-7000
1913	40	4	1685	7001-11000
	50	4	1985	
	60	6	2485	
1914	4	4	1925	14001-15000
	6	6	2600	16001-17012
1915	4-40	4	1485	15001-16000
	6-60	6	2465	18001-29999
1916	860	8	1595	30000-39999
1917	862	8	1695	40000-49999
1918	870	8	2395	50000 up

CUNNINGHAM

Year	Model	Cyls	Price	
1912	J	4	$3250-4500	Feb. 1, 1912-Mar. 1913, J-181 to J-305
1913	M	4	3250-4600	May, 1913-Apr. 1914, M-306 to M-455
1914	R	4	3750-5000	Apr. 1914-June, 1915, R-456 to R-755
1915	S	4	3750-5000	May, 1915-May 1, 1916, S-756 to S-990
1916	V1	8	3750-5000	Apr. 1, 1916-Apr. 1917, V-991 to V-1297
1917	V2	8	3750-5500	Apr. 1917-Dec. 31, 1917, V/2-1298 to V/2-1597
1918	V3	8	4250-6000	Dec. 1917-Dec. 1918, V/3-1601 to V/3-2050

DETROITER

Year	Model	Cyls	Price	Serial Numbers
1916	F	4	$985	15000-20000
	6-45	6	1098	
1917	6-45	6	1195	20001 up

Number on dash plate

COLUMBIA

Year	Model	Cyls	Price	Serial Numbers
1917	....	6	....	A501-A1310
1918	....	6	1350	C2000 up

Motor Age Monthly Farm-Lighting Specification Tables

Name and Model	Maker	Watts capacity	No. 20 watt lamps	Lamp voltages	No. cyl'd s	No. cycles	Make of engine	Horsepower	Fuel	Cooling	Power pulley	Generator drive	Make of generator	Make of battery	Battery amp. hours	Battery, volts	No. cells	Starting engine	Stopping engine	Governor, type	Price
Acorn	Acorn Electric Mfg. Co., Minneapolis	....	....	....	1	..	Newway	...	.....	Air	Yes	Belt	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aerothrust	Aerothrust Engine Co., La Porte, Ind	....	15–25	....	2	2	.....	3	.....	Air	Opt.	Shaft	.....	.....	60	28–42	.....	.....	.....	.....	.....
Alamo	Alamo Farm Light Co., Omaha, Neb	1000	75–120	40	1	4	Ide	1¼	.....	Water	.....	Direct	.....	.....	.....	.....	16	.....	.....	Throttle	.....
Alco	Automatic Light Co., Minneapolis, Minn	750	40	110	1	4	Alco	2	G	Water	Opt.	Direct	GE Alco	Willard	76	6	3	Auto.	Auto.	Electro sole.	$ 375
		850	55–75	32	1	4	Alco	2	G	Water	Opt.	Direct	GE Alco	Willard	80	32	.....	S-Auto.	Auto.	Electro sole.	450
Cushman, A	Cushman Motor Works, Lincoln, Neb	1000	20–70	32	1	4	Own	4	.....	Water	Yes	Belt	Imperial	.....	80	32	16	S-Auto.	S auto.	Throttle	.....
B		1000	25–75	32	1	..	Own	4	.....	Water	Yes	Belt	Imperial	.....	120	32	16	S Auto.	S auto.	Throttle	.....
E		1000	50–100	32	1	4	Own	4	.....	Water	Yes	Belt	Imperial	.....	180	32	16	S Auto.	S auto.	Throttle	.....
Delco, ¾ KW, 32 volt	Domestic Engineering Co., Dayton, Ohio	750	20–72	32	1	4	Own	1½	K	Air	No	Direct	Own	Exide	80–160	32	16	S-Auto.	Auto.	Voltage	425–490
3 KW, 32-volt		3000	150	32	1	4	Own	5	K	Air	No	Direct	Own	Exide	80–160	32	16	S-Auto.	Auto.	Voltage	900
3 KW, 110-volt		3000	150	110	1	4	Own	5	K	Air	No	Direct	Own	Exide	80–160	112	36	S-Auto.	Auto.	Voltage	1,200
Dyneto, 5	Dyneto Electric Co., Syracuse, N. Y	600	20–42	32	1	4	Novo	1½	.....	Water	Opt.	Belt	Own	Willard	53	32	16	S-Auto.	S-Auto.	.....	385
7		....	16–54	32	1	4	Novo	1½	.....	Water	Opt.	Belt	Own	Willard	80	32	16	S-Auto.	S-Auto.	.....	410
9		....	23–65	32	1	4	Novo	1½	.....	Water	Opt.	Belt	Own	Willard	110	32	16	S-Auto.	S-Auto.	.....	460
Fairbanks-Morse, F-3 hp	Fairbanks, Morse & Co., Chicago	900	13–100	30	1	4	Own	3	K	Water	.....	Belt	Own	.....	66	32	16	S-Auto.	Manual	.....	.....
F-6 hp		3500	40–200	30	1	..	Own	6	K	Water	.....	Belt	Own	.....	200	32	16	S-Auto.	Manual	.....	.....
Fairmont, B-4	Fairmont Gas E. & R. M. Co., Fairmont, Minn	....	50	....	..	2	.....	...	K & G	Water	.....	.....	Own	Edison	.....	.....	.....	.....	.....	.....	.....
Garford	Garford Mfg. Co., Elyria, Ohio	600	16–62	30	..	..	Any	2	.....	.....	.....	Belt	.....	Gould	80	32	11	.....	Manual	.....	320
Genco, A	General Gas-Electric Co., Hanover, Pa	500	6–43	30	1	4	Own	2	Any	Water	Yes	Direct	Own	Own	110	32	16	S-Auto.	Auto.	.....	.....
B		600	10–59	30	1	4	Own	2	Any	Water	Yes	Direct	Own	Own	167	32	16	S-Auto.	Auto.	.....	.....
Jones, A	L. B. Jones Co., Kansas City, Mo	750	40	....	1	4	.....	...	.....	Water	.....	Direct	.....	.....	.....	.....	.....	S-Auto.	Auto.	.....	.....
Lalley	Lalley Electro-Lighting Co., Detroit	1000	50	32	1	2	Own	1½	G	Water	.....	Direct	.....	Willard	115	32	16	Manual	Manual	Throttle	475
Lauson-Edison, 201	John Lauson Mfg. Co., New Holstein, Wis	800	7–30	50	1	4	Opt.	2½	Opt.	Water	Opt.	Belt	Own	Edison	38	50	26	Manual	Manual	Throttle	.....
202-30		1400	16–50	50	1	4	Opt.	2½	Opt.	.....	Opt.	Belt	.....	Edison	75	52	26	Manual	Manual	Throttle	.....
203-30		2000	22–75	50	1	4	Opt.	3½	Opt.	.....	Opt.	Belt	.....	Edison	112	52	26	Manual	Manual	Throttle	.....
206–110		3500	27–154	125	1	4	Opt.	4½	Opt.	.....	Opt.	Belt	.....	Edison	38	.....	94	Manual	Manual	Throttle	.....
Lauson Junior, 300		500	10–25	30	1	4	Opt.	1½	Opt.	.....	Opt.	Belt	Own	.....	40	30	15	Manual	Manual	Throttle	.....
301		800	15–40	30	1	4	Opt.	1½	Opt.	.....	Opt.	Belt	Own	.....	60	30	15	Manual	Manual	Throttle	.....
Langstadt-Meyer, 6	Langstadt-Meyer Co., Appleton, Wis	600	30–45	32	1	4	L-M	3	G	Water	Yes	Belt	L-M	.....	80	32	16	S-Auto.	Manual	Throttle	576
6½		1200	75	32	1	4	L-M	3	G	Water	Yes	Belt	L-M	.....	80	32	16	S-Auto.	Manual	Throttle	606
7		960	72	32	1	4	L-M	3	G	Water	Yes	Belt	L-M	.....	107	32	16	S-Auto.	Manual	Throttle	650
Main, 25-30 volt	Main Electric Mfg. Co., Pittsburgh, Pa	600	25–41	30	1	4	Own	1½	Opt.	Water	Yes	Belt	Own	.....	60	30	15	Manual	Manual	.....	375
40		800	40–56	30	1	4	Own	1½	Opt.	Water	Yes	Belt	Own	.....	95	30	15	Manual	Manual	.....	400
50		1000	50–66	30	1	4	Own	2½	Opt.	Water	Yes	Belt	Own	.....	95	30	15	Manual	Manual	.....	360
75		1500	22–97	30	1	4	.....	3½	Opt.	Water	Yes	Belt	Own	.....	130	30	15	Manual	Manual	.....	390
50		1000	25–75	110	1	4	.....	2½	Opt.	Water	Yes	Belt	Own	.....	40	110	55	Manual	Manual	.....	575
75		1500	38–113	110	1	4	.....	3½	Opt.	Water	Yes	Belt	Own	.....	60	110	55	Manual	Manual	.....	680
100		2000	60–160	110	1	4	.....	3½	Opt.	Water	Yes	Belt	Own	.....	95	110	55	Manual	Manual	.....	720
Marco	Marmon-Chicago Co., Chicago	1250	85–100	32	1	4	Newway	4	Opt.	Air	Yes	Chain	Dyneto	Perf't'n	.....	32	11	S-Auto.	.....	Electro-mag.	595
Matthews, A	Matthews Engineering Co., Sandusky, Ohio	1000	50	32	1	4	Own	3	G	Water	No	Direct	G-E	Willard	72	32	16	Auto.	Auto.	Electro-mag.	795
A-1		1000	50	32	1	4	Own	3	G	Water	No	Direct	G-E	Willard	72	32	16	S-Auto.	Auto.	Electro-mag.	695
B		2000	100	32	2	4	Own	7	G	Water	No	Direct	G-E	Willard	144	32	16	Auto.	Auto.	Electro-mag.	1,350
B-1		2000	100	32	2	4	Own	7	G	Water	No	Direct	G-E	Willard	144	32	16	S-Auto.	Auto.	Electro-mag.	1,250
C		1000	50	110	1	4	Own	3	G	Water	No	Direct	G-E	.....	.....	.....	.....	Manual	Manual	Electro-mag.	775
		2000	100	110	2	4	Own	7	G	Water	No	Direct	G-E	.....	.....	.....	.....	Manual	Manual	Electro-mag.	1,300
Mayhew, K 1	Mayhew Co., Milwaukee, Wis	800	12–40	32	1	4	.....	...	G	Water	Yes	Direct	Western	.....	80	32	16	S-Auto.	Manual	Flyball	475
K 2		800	16–48	32	1	4	.....	...	G	Water	Yes	Direct	Western	.....	125	32	16	S-Auto.	Manual	Flyball	510
K 3		800	22–54	32	1	4	.....	...	G	Water	Yes	Direct	Western	.....	160	32	16	S-Auto.	Manual	Flyball	550
Mor-Lite	Fairbanks, Morse & Co., Chicago	....	15–40	30	1	..	.....	...	G	Water	.....	Direct	.....	.....	.....	32	16	S-Auto.	Auto	Electro mag.	.....
Owen	R. M. Owen & Co., New York	1250	100	32	1	4	Own	1¼	G	Water	No	Direct	.....	.....	80	32	16	S-Auto	Auto.	.....	.....
Perfection, SA 1	Perfection Storage Battery Co., Chicago	1500	75	32	1	4	.....	3	Opt.	Water	.....	Direct	.....	Own	80	32	16	S-Auto.	Auto.	.....	600
FA 6		1500	65	32	1	4	.....	3	Opt.	Water	.....	Direct	.....	Own	40	65	32	Auto.	Auto.	.....	800
Powerlite, 163 L 65	Montgomery Ward & Co., Chicago	650	20	32	1	4	Own	2½	G	Water	Yes	Direct	Own	Own	60	32	16	S Auto.	Manual	Throttle	348
163-L-67		650	31	32	1	4	Own	2½	G	Water	Yes	Direct	Own	Own	90	32	16	S-Auto.	Manual	Throttle	365
163-L-69		650	41	32	1	4	Own	2½	G	Water	Yes	Direct	Own	Own	120	32	16	S-Auto.	Manual	Throttle	380
Rohaco, Unit	Roberts-Hamilton Co., Minneapolis, Minn	1500	75	32	1	4	Own	3	Opt.	Water	Yes	Direct	.....	Opt.	75–100	32	16–24	S-Auto.	Manual	Flyball	.....
A-1		500	13–40	40	1	4	Own	1½	Opt.	Water	Yes	Belt	.....	.....	60	30	15	S-Auto.	Manual	Flyball	*250
BE-1		800	30	50	1	4	Own	2	Opt.	Water	Yes	Belt	.....	Edison	75	50	24	S-Auto.	Manual	Flyball	*500
BE-2		1400	32–80	50	1	4	Own	3	Opt.	Water	Yes	Belt	.....	Edison	113	50	24	S-Auto.	Manual	Flyball	*600
B-3		2000	24–120	40	1	4	Own	5	Opt.	Water	Yes	Belt	.....	.....	120	32	16	S-Auto.	Manual	Flyball	*490
BE-3		2000	100	50	1	4	Own	5	Opt.	Water	Yes	Belt	.....	Edison	150	50	24	S-Auto.	Manual	Flyball	*750
Swanlite	Black Swan Co., Waseca, Minn	1000	50–100	....	1	4	Own	3	Opt.	Water	No	.....	.....	.....	80–160	32	16	.....	.....	.....	385–465
Swartz-Unit	Swartz Electric Co., Indianapolis, Ind	1000	50	30	1	2	Own	...	G	Water	No	Direct	Own	Opt.	88	32	16	S-Auto.	Manual	Electro-mag.	.....
E		1500	50	30	1	4	Own	...	Opt.	Water	Yes	Belt	Own	Opt.	88	32	16	Manual	Manual	Flyball	.....
F		2000	100	60	1	4	Own	...	Opt.	Water	Yes	Belt	Own	Opt.	88	64	32	Manual	Manual	Flyball	.....
Uni-Lectric	Uni-Lectric Corp., Detroit	660	33	110	1	..	Own	...	.....	Water	.....	Direct	Own	.....	80	6	3	S-Auto.	.....	.....	472
West. Elect., 15-DC-90	Western Electric Co., New York	1500	75	32	1	..	Own	3¼	K	Air	Yes	Direct	Own	.....	90	32	16	S-Auto.	Auto.	Throttle	.....
15-DC-180		1500	100	32	1	..	Own	3¼	K	Air	Yes	Direct	Own	.....	180	32	16	S-Auto.	Auto.	Throttle	.....
Winton	Winton Eng. Works, Cleveland, Ohio	5000	250	115	4	4	Own	...	.....	Water	.....	Direct	Own	Opt.	Opt.	Opt.	Opt.	.....	.....	.....	.....
Wisconsin, 15-light	Lauson-Lawton Co., De Pere, Wis	450	12	30	1	..	Own	2½	.....	Water	Yes	Belt	Own	.....	36	26	13	Manual	Manual	.....	.....
30-light		600	24	32	1	..	Own	2½	.....	Water	Yes	Belt	Own	.....	36	32	16	Manual	Manual	.....	.....
50-light		800	40	32	1	..	Own	2½	.....	Water	Yes	Belt	Own	.....	60	32	16	Manual	Manual	.....	.....
100-light		1500	80	32	1	..	Own	4	.....	Water	Yes	Belt	Own	.....	100	32	16	Manual	Manual	.....	.....

*Without engine. Opt., optional. S-Auto., semi-automatic. K, kerosene. G, gasoline. Electro-mag., electro-magnetic.

The Readers' Clearing House
Questions and Answers

Conducted by B. M. Ikert

Oiling System on Chevrolet

Q—PUBLISH oiling system on Chevrolet 490?—J. W. Jones, Jr., Greenville, S. C.

A diagram of the oiling system used on the Chevrolet 490 is shown in Fig. 2. The oiling system is known as the constant-level splash type. Oil is carried in the bottom of the crankcase and is filled through a filler tube on the left side of the engine, just back of the fan. The oil level is indicated by two pet-cocks on the side of the reservoir. Oil is drawn from the reservoir by a geared pump located on the end of the generator shaft and is fed then into a basin having four troughs, or depressions, into which the spoons, or splashers, of the connecting rods dip. The rapid splashing of these spoons keeps the main bearings, connecting rods bearings, piston pins and cylinder walls bathed in oil, whence it drains back to the reservoir and is used over again. A dial is placed on the instrument board of the car to show whether the pump is working. Air leaks in the suction pipe, for instance, would cause failure of the oiling system and perhaps serious damage to the engine unless discovered in time, as, for example, by the dial failing to register any pressure.

Carburetion

Counterweight on Marvel

Q—In the adjustment of the Marvel carbureter as given in the Dec. 12 issue you mention counterweight. Where do I find this in the carbureter?—G. L. Eurard, Bradford, Ill.

The model D Marvel carbureter is fitted with a counterweight, as shown in Fig. 1. This weight should never begin to raise until the engine is running at about 800 to 1000 r.p.m. Turning the adjusting screw to the right raises the weight and to the left, lowers it.

Merits of Carbureters

Q—Would you advise installing a Sunderman vacuum carbureter on a Saxon roadster? The present carbureter lacks flexibility.—V. Steinborn, Chicago.

MOTOR AGE cannot make recommendations as to any particular carbureter to be used. There are many on the market that will serve your purpose and, being more modern now, would do better work. By consulting the advertising columns you will be able to judge of the claims made for several instruments.

Reader Suggests Heater

Greemount, Md., Editor MOTOR AGE—In the Readers' Clearing House of Dec. 19, under heading of Carburetion, I notice the question of W. S. of Streator, Ill., regarding his 1910 E. M. F. 30. I have one of 1911 which no doubt is about the same as his, on which I have changed the carbureter several years ago, first using an Air

Lubrication

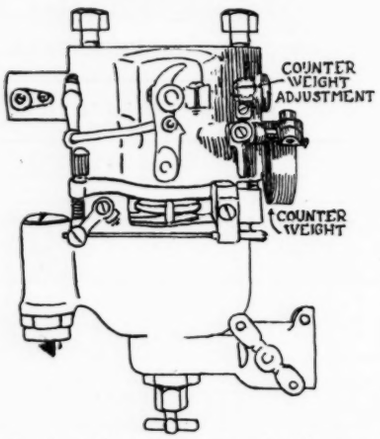


Fig. 1—Side view of Marvel carbureter, showing location of counterweight

Friction and later a Stromberg model K, 1-in., which is a very good carbureter, very easy to start, and I get about 17 m.p.g. of gasoline. The great trouble with this car is after it is started until it runs several miles and gets properly heated up.

The car, as he states, has too much intake pipe and will not work right in cold weather until this pipe gets good and warm. I had a jacket put on the intake pipe and tapped the exhaust manifold for ⅛-in. pipe and connected it to the jacket with ⅛-in. copper tubing with the expectation that this would heat it, but it does not make it hot enough, as the tubing is too small. I expect to tap the exhaust manifold for ⅜-in. pipe and connect it to the jacket with flexible metal tubing about ½ in. Possibly hot water could be circulated through the jacket by tapping the water line as shown in the illustration, but the difficulty in this would be in connecting to the pump, owing to its position. It would be almost impossible to change the carbureter to the other side of the engine, as the magneto is placed where the carbureter should be. If W. S. will write me, giving his name and address, I will give him full particulars in regard to installing a Stromberg on his car.—Arthur A. Garrett.

Warming Induction Pipe

Stewart, N. J., Editor MOTOR AGE—Referring to your article as to a later carbureter on page 37, Dec. 19 issue, in the next to the last paragraph you recommend wrapping the induction pipe with asbestos to keep out the cold and retain the heat. This appears to be incorrect, because the evaporating gasoline inside the pipe is practically cold and wrapping will prevent the heat thrown off from the engine from warming it from the outside. Wrapping it with copper tubing and allowing the hot water to flow around it will help, but why not use the hot exhaust gases?

Tap into the exhaust line in front of one of the exhaust valves with ¼-in. iron pipe by elbows, etc., close to induction pipe and then wrap with ¼-in. flexible aluminum tubing as closely as possible. Copper pipe might be better. Then continue through the oil pan so as to allow the exhaust gas to escape under the car. It also will help to wrap asbestos paper or wick around the whole. I have followed this method on my 1916 Dodge Brothers, which has practically no induction pipe, but I put the flexible pipe around the top of the Stewart carbureter. After engine gets warmed up it throttles down beautifully in the coldest weather.—Edgar C. McCall.

Engines

Why Engine Starts Hard

Q—Why is it that after two or three years' use most Fords get hard to crank, due to clutch dragging? How can this be remedied?

2—Where can I get a good book on all starting and ligting systems, their troubles, adjustments and repair?—Herman Bopp, Brussells, Ill.

1—This difficulty comes from wear on

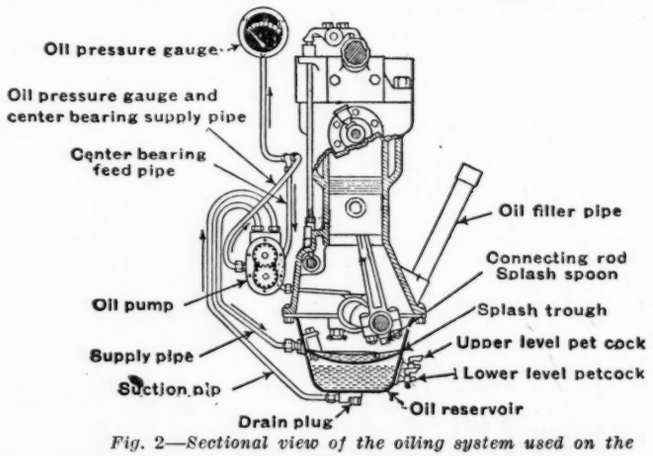


Fig. 2—Sectional view of the oiling system used on the Chevrolet 490

the lugs on the inside of the drum of the transmission, over which the slots in the clutch plates go. After considerable use these lugs become worn on the edges, or, rather, the corners become rounded, and this permits the plates to wedge to the extent that they will drag. The only remedy is to replace the drum with a new one, and at the same time it will be necessary to put in new plates as well, otherwise the work will give only temporary relief. The lugs are shown in Fig. 3 for identification.

2—Write the U. P. C. Book Co., 342 West Thirty-ninth street, New York. Either Page on "Modern Starting, Lighting and Ignition Systems" or Hayward on "Automobile Ignition, Starting and Lighting," doubtless will serve your purpose. The latter is simplified and easily understood.

Noise of Pushrods

Q—I have a Maxwell Mascot fitted with a Rayfield carbureter. It has good power, and the differential and transmission are in good shape. The pushrods on this car are square with the lower end tapered like a wedge. This pressure, when the cams force up the pushrods causes them to wear in the rod guides and for the cams soon to become loose on the camshaft. They click as the pushrod rounds the point of the cam and starts to close. Would a pushrod with a flat bottom eliminate this noise or would putting a roller in the present rods answer as well?

2—I intend to have a new intake manifold cast. Do you advise having one straight across with the carbureter connected to a flange in the center, or should it have a slight downward slope in the center?—Y. C. Sorter, St. Louis, Mo.

1—It is extremely doubtful if you can remedy this trouble, which is in engine design and difficult to change without completely rebuilding the pushrods and guides—if there is room for this. By increasing the face of the end of the pushrod, either by having a mushroom end or by placing thereon a roller, you will change the time of the valve opening and so will again call for new cam design. It is easy to see that by substituting a mushroom end the cam will begin and end lifting at a different point in relation to the position of the piston, and it will also permit the valve to drop at a different time, thus upsetting the timing scheme as worked out when the engine was built.

You may be able to overcome the side slap which the pushrod gives against the guide by tapping into the side of the guide and inserting a flat-end bolt that can be set in a little closer to hold the pushrod against the other side of the guide, as shown in Fig. 4. A still better scheme will be to interpose between the bolt end and the pushrod, inside the guide, a flat spring slightly bent so the bend in the center will come in contact with the bolt end. Then the slightest movement of the bolt will set the spring a little tighter and hold the pushrod against the other side. But this will call for milling out a slot the width of the spring for the latter to rest in, so that it will not get out of place and probably wedge between the rod and the guide. This is shown in Fig. 4 also.

2—Again you are getting into difficulty in attempting to alter the maker's design and this is no easy matter to accomplish with success. It is true that old type manifolds were lacking in many ways, and that evolution has changed things. It is also true that engineers spend months working out manifold design to meet certain requirements, founded upon tests and investigation. We believe you will be able to find a modern manifold that will fit this model of the Maxwell, and embodying the hot spot feature, such, for instance, as the Wilmo, made by the Wilmo Auto Necessities Co., 2332 Michigan avenue, Chicago. But if you intend making a manifold, do not make the mistake of increasing the diameter, for with the poor grade of gasoline now on the market trouble will come through condensation of the fuel.

TO assist readers in obtaining as a unit all information contained in this department on a certain subject MOTOR AGE segregates inquiries into divisions of allied nature. Questions pertaining to engines are answered under that head, and so on.

LUBRICATION.

J. W. Jones, Jr.....Greenville, S. C.

CARBURETION

G. L. Eurard.....Bradford, Ill.
V. Steinborn.....Chicago
Edgar C. McCall.....Stewart, N. J.

ENGINES

Herman Bopp.....Brussels, Ill.
Y. C. Sorter.....St. Louis, Mo.
Julius Anderson.....Elberin, Iowa
John Dunn.....Streator, Ill.
C. O. McDonald.....Norfolk, Va.
E. J. Daugherty....Stevensville, Mont.
W. E. Brown.....Penalasa, Kan.
Guy N. Walker.....Hillsboro, Tex.

MISCELLANEOUS

John W. Kutz.....Goshen, N. J.
H. S. Rhodes.....Lancaster, Wis.
Theodore McClintock.Kansas City, Mo.
W. E. McKee.....Montezuma, Iowa
Lloyd Waters.....Neillsville, Wis.
W. E. Brewster.....Baltimore, Md.
George Arrosmith.....Clinton, Ind.

THE ELECTRIC SYSTEM

R. P. Johnson.....Gwinler, N. D.
Frenk Benson....West Farmington, O.
Earl Barr.....Monroe, Wash
W. E. Brewester.....Baltimore, Md.
C. F. Patry.....Bengal, Minn.

REBUILDING.

Y. G. Sorter.....St. Louis, Mo.

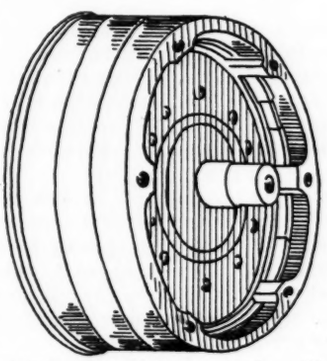


Fig. 3—Ford gearset, showing lugs which wear after continued use

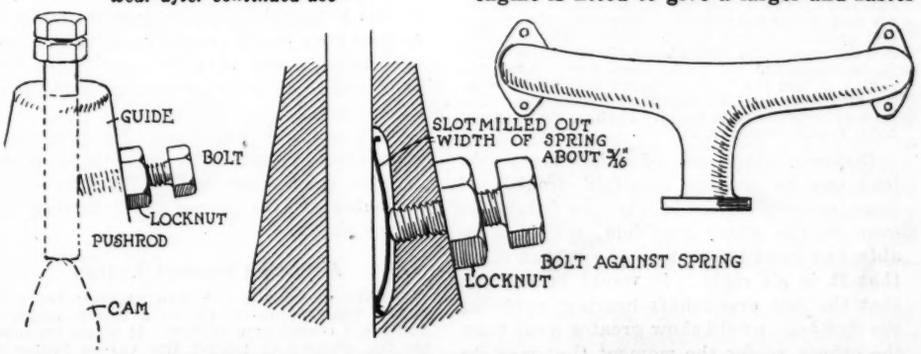


Fig. 4—Overcoming side slap by inserting flat-end bolt to hold pushrod against guide, left; milling out slot for spring to rest in so it will not get out of place, center; and type of manifold to meet conditions with low-grade gasoline

The shorter you can have the riser the better, as this will not attract cold so much, the gas will have a shorter distance to travel and will give better results all around. You cannot do this unless the bottom of the gasoline tank is higher than the carbureter or unless you install a vacuum tank, which must be located above the carbureter to work at all. A manifold designed along the lines shown in Fig. 4, will, we believe, be about as good as you can have.

Various Engine Queries

Q—Why are no Knight sleeve-valve engines used in the racing cars?

2—What is the r.p.m. of the Grant six touring car, Cadillac, Willys six for 1918, overhead-valve 1918 Nash and 1917 and 1918 Hudsons?

3—What was the fastest racing car on the track in 1918?

4—Are the Hudson racing cars built by the Hudson company, and do they use the same engines as in the touring car?

5—Is there any perfect kerosene-burning carbureter on the market?

6—What engine is used in the Stephens six? Is it made by Moline?

7—Who was acknowledged race driver of 1918, and what was the make of car and engine?

8—What is the weight of the Cadillac, Hudson and medium-sized Moline-Knight?

9—What was the bore of the 1918 Cadillac?—Julius Anderson, Elberin, Iowa.

1—The Knight type engines have not been used extensively in racing cars for the principal reason that the manufacturers using them have not been interested in racing. However, it will be recalled that a Minerva-Knight car was second in the Isle-of-Man race a few years ago, and in one of the last 500-mile races at the Indianapolis speedway there was a Mercedes-Knight which went the entire distance without trouble.

2—MOTOR AGE has not the data pertaining to the revolutions of engines. It would mean very little, anyway. Of course, the rated horsepower is given at a certain number of revolutions per minute, but this means nothing in actual practice because it is seldom this stated number of revolutions could be maintained except, possibly, on a speedway.

3—The fastest car that appeared on the track last season was a Packard twelve, driven at Sheepshead Bay by Rader, and probably the next in point of speed was the Packard driven by de Palma.

4—The engines used in Hudson racing cars are built by the Hudson company and in general are the same as used in other cars of that make. It must be understood, of course, that the racing car is thoroughly prepared for fast work. Usually there is a little difference in the setting of the valves, in the gear ratio used and the engine is fitted to give a larger and faster

circulation of water. In addition, every little detail is worked over after each trial so that nothing can possibly go wrong in a race. Pistons are fitted with a little more clearance to allow for the bigger expansion of metals, and there are other details which must be gone into in a racing car that are not necessary in a passenger car. To all intents and purposes, however, the engine is the same.

5—There are now made many carbureters for using kerosene instead of gasoline, but they generally are used on tractors. MOTOR AGE cannot pass on the merits of any carbureter. Kerosene carbureters are now made by Shebler, Kingston, Holley and other concerns which manufacture the gasoline type carbureter.

6—The engine in the Stephens car is one made for the concern at Moline.

7—Nobody was officially judged racing champion for 1918, but Ralph de Palma undoubtedly made the best showing for the entire season. He used a special Packard car with a special twin-six engine.

8—Weights of cars vary according to equipment and other things, so that the figures given may show a discrepancy of from 50 to 100 lb. The weight of the Cadillac eight touring car is given at 3650 lb.; the Hudson six touring car, 3300, and the medium-sized Moline-Knight, 2975.

9—The Cadillac eight-cylinder engine has a bore of 3⅛ in. and a stroke of 5⅛.

Manifold Trouble Suspected

Q—I have a 1910 Interstate in good condition. Three years ago I noticed the back cylinders would hit all right when starting cold and the front ones would miss until the engine had warmed up. The trouble still exists and the only way I can overcome it is to have the mixture strong enough so that all four cylinders will hit. At 15 or 20 m.p.h. the engine runs smoothly, but in going up a hill or in mud, the back cylinder hits harder than the other three and the back crankpin bearing shows most wear. The back cylinders have more carbon in them than the front two. I put on a Bosch high-tension magneto, a Rayfield carbureter, Stewart vacuum system, new spark plugs, took off the cables and tested them for electrical resistance and soldered the terminals on. I also turned down the valve systems and fitted in new guide bushings, grinding the valves in afterward. I put four new rings on each piston. The pistons are 0.002 in. loose in the cylinder and when the rings work the cylinders are about 0.006 in. bigger than elsewhere. I use a good grade of oil and change it frequently flushing out the crankcase with kerosene.

The manufacturer advised me to raise the front end of the oil pan slightly. I did this ⅛ in. but it did no good. I then fitted a valve on the back oil pipe and shut the oil off entirely from the two back cylinders. I put the carbureter close to the intake manifold when I put on the vacuum tank. There are absolutely no air leaks anywhere, still the back cylinders seem to get a stronger mixture than the front. Thinning the mixture always makes the front cylinders mix first.

The water circulation is all right and the compression is about equal in all cylinders. I checked up the lift of all valves with a micrometer and found very little difference. Using high test gasoline makes no difference. The magneto is a set spark and fires ahead of the center about ¾ in. measured on the flywheel run. When the engine is hot the back cylinder will knock with a metallic knock on account of the carbon. The back cylinder bore is no larger than the front.—John Dunn, Streator, Ill.

Distance diagnoses of this case would lead one to suspect manifold trouble of some nature, either in the gas intake or even in the water manifold, which probably has been ignored on the presumption that it is all right. It would be natural that the last crankshaft bearing, carrying the flywheel, would show greater wear than the others, so for the moment that may be eliminated.

Carbon deposits may come from too much lubricating oil and also from too much

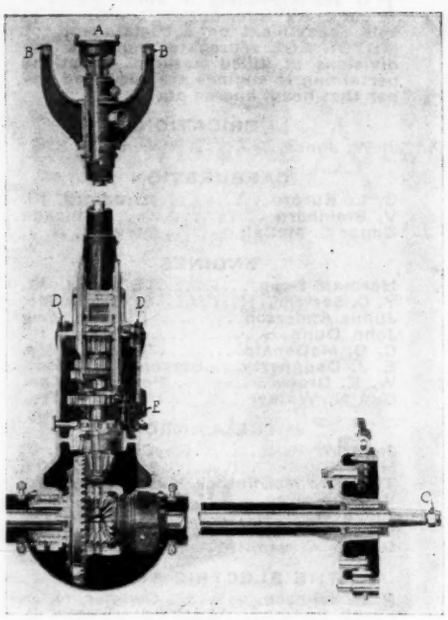


Fig. 5—Saxon rear axle, gearset and universal, showing parts that must be removed to replace gears

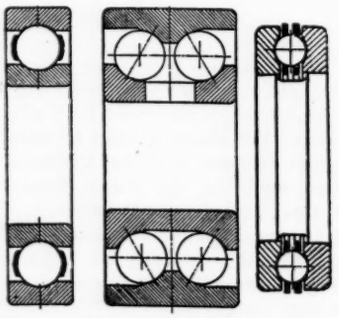


Fig. 6—Annular and thrust bearings

gasoline, and if you have shut off the oil from the two back cylinders for a sufficient length of time to determine that this is not the cause of the trouble, that may be forgotten and the carbon deposits charged up to too rich a mixture, which is admitted for the last two cylinders.

It would be advisable to look to the intake manifold and see that there is no restriction in that part leading to the two forward cylinders—that each side is of equal capacity, that the gaskets do not protrude to restrict the flow of gas and that there are no leaks.

It may be possible the forward cylinders cool more readily than the other two, and if this happens to be the case it would be natural they would require more gas to prevent missing and then, of course, the two back cylinders will be getting more than they demand.

With all the experimenting you have gone through and with everything seemingly in good shape, it is difficult to locate a trouble of this sort without having the engine at hand.

Adjusting Stewart Engine

Q—We purchased a ¾-ton Stewart truck in 1917. The engine is run on a Bosch magneto and has a rocker arm system. It seems impossible for anyone to adjust the valves properly. They have been reground and are well seated. The general opinion seems to be that the trouble is either that the magneto is wired wrong and out of time, or the fact that there is no accurate way of adjusting the pushrods, which are arranged on the outside of the engine operating the rocker arms. I am satisfied that the trouble is not in the carbureter, which was originally a Zenith but now replaced by a Stromberg.—C. O. McDonald, Norfolk, Va.

A very careful checking up all through will be necessary to locate your trouble, inasmuch as it may be due to any one of several things. If you are sure the valves are well seated and the compression good, the trouble is not with the valves unless there is insufficient clearance between the rocker arms and the pushrods. After you have run the engine to get it thoroughly warmed see that there is a cardboard clearance between the rocker arms and pushrods.

Then go to the magneto, for it would be useless to attempt to adjust a carbureter if the ignition is wrong in any way. You do not state what model of Bosch magneto is used, however. In the Nov. 21 issue of MOTOR AGE a wiring diagram of the DU4 Bosch was published and if it is this model, which is likely, check up and see if the wiring corresponds. If it is some other model, procure a wiring diagram from the Bosch. It is not likely the armature and distributer setting has been disturbed, for that is fixed at the factory and should never be changed. Assuming this to be as it was when installed on the car, see if the timing is correct. Turn the engine over until piston No. 1 is on top dead center on the compressed stroke and see that both valve pushrods are free, to indicate perfect valve seating and, consequently, correct compression.

Now retard the spark lever and see, at the same time, that the timer arm on the magneto works with the spark lever. When the spark lever is fully retarded and the piston is at the top of the compression stroke the breaker in the magneto should just begin to open. If this is found as indicated, then it may be known that the ignition is correct.

Trace all the wiring, see that the points on the plugs are $\frac{1}{32}$ in. apart, that the commutator on the magneto is free from dirt and that the segments on the face of the distributer are clean. When you have checked all this up you next can go to the carbureter, if the trouble has not been found. It will afford some degree of satisfaction to know just what was the trouble, and this can be determined by trying the engine after each operation of checking up.

Piston Rings Worn

Q—Will the car pull as it ought to if the piston rings are worn or the valves need grinding?—F. J. Daugherty, Stevensville, Mont.

Valves and their seats that are encrusted with deposits of carbon are bound to cause loss of compression, so also will rings if they do not expand and lie close to the cylinder walls, as they cannot if the cylinders are out of round. The result is loss of compression, which means loss of the gas charge and a consequent loss of power. When a boy and you shot off firecrackers you made some into squibs by opening them up. They burned but without force because the powder was not confined, whereas in the snappy ones the powder was confined. It is so with an engine. With tight and well fitted rings and valves that seat properly the efficiency of the engine is at its best, whereas a very little compression leak,

either past the rings or through fouled valves, will cause an immense loss of power and consequently the engine cannot do the most work required of it. At the same time it is taking in just as much fuel and it is costing as much to operate without getting the work it should give.

Oversized Pistons in Oakland

Q—Would you advise fitting oversize pistons on my Oakland 37, which has been driven about 2800 miles? Which is the most satisfactory way to fit them?—W. E. Brown, Penalasa, Kan.

It is not at all unlikely that you need new pistons, for many makers had some little trouble with the earlier alloys used, which wore more than they should have. It is all a question of whether the pistons permit oil to reach the combustion chamber and if compression is low. You can procure new pistons either from the Oakland factory or the Northway Motor Co., one of the General Motors group and maker of the Oakland engine. If you decide to put in new pistons, be sure to get those with four ring grooves, new rings and fit with a clearance of 0.0035 in.

Cadillac Firing Order

Q—How does the Cadillac eight fire?
2—On an eight-cylinder engine what degree are the connecting rod journals set with the main journals?—Guy N. Walker, Hillsboro, Texas.

1—This engine fires as follows:—1L, 2R, 3L, 1R, 4L, 3R, 2L, 4R.

2—We cannot think you mean literally what you ask; possibly the question refers to the angle of the connecting rod, which naturally varies with the position of the piston. The angle of the cylinders is 90 deg. In this eight-cylinder engine, as in others, there are four crank throws, as in a four, with two connecting rods on each throw.

Miscellaneous

Replacing the Transmission

Q—Publish diagram and give instructions for dismantling my Saxon roadsters of 1914 and 1916 to replace gears in transmission and differential gear.—John W. Kutz, Goshen, N. J.

A diagram of the rear axle, transmission and universal joint of the Saxon four is shown in Fig. 5. To dismantle it it will be necessary to take apart the universal joint, shown at A, remove the nuts and bolts at B that hold the torsion tube yoke in place and thus permit you to drop the front end of the torsion tube and the driveshaft within it.

First, however, jack up the body of the car to permit taking out the rear axle entirely. This will require taking out the spring bolts and removing the wheels. After taking off the hub cap and the locknut C the wheel can be pulled off. If it holds fast, place a piece of brass against the end of the shaft and while someone pulls on the wheel tap the end of the brass piece against the shaft. This will start the wheel.

You now can easily get at the axle after it has been pulled from under the car. Just forward of the transmission case will be found nut D, which when removed will permit the main shaft of the transmission to come out and then the rest will follow easily. It will not be necessary to remove the differential, but after putting in new gears and replacing all the parts, be sure there is good adjustment between the driving pinion and the ring gear. The adjusting nut is shown at E, and turning this to the left when standing back of the axle will tighten the mesh between the pinion and the ring gear and turning it to the right will loosen it. This is a right-hand thread, and to tighten the adjustment you should be in front of the axle and turn to the right to tighten.

Correct adjustment between the pinion and the ring gear is when you can run a cigaret paper between the two gears without having it entirely destroyed.

Play in Steering Gear

Q—The steering gear in my Overland 83B is loose. I found some play in the steering arm, where it clamps on the steering worm gear shaft and fixed this. There is still too much slack when I turn the eccentric sleeve up so tight that I cannot turn the steering wheel. Could it be that the steering worm is loose on the steering shaft tube? The trouble is in the steering assembly somewhere, and as I have turned the steering worm to a new bearing surface, where else could I look for the trouble?—H. S. Rhodes, Lancaster, Wis.

There are three places where an excessive amount of play can be found in an Overland steering gear. Ordinarily the greatest amount of play comes between the worm and the worm gear, and the next point is where the steering arm is clamped to the squared end of the worm gear shaft. The worm itself is keyed to the steering part, and while it is possible the keyway edge or the key itself has become bruised sufficiently to allow a little play, it is not likely. This could only be determined by

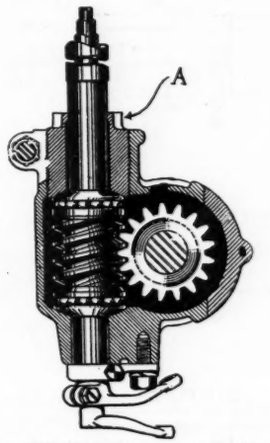


Fig. 7—Adjustments for correcting lost motion in the steering gear

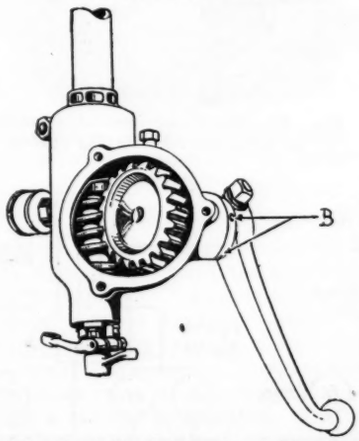


Fig. 8—Adjustments for taking up motion between the worm and worm wheel

opening the housing and by holding the worm and twisting the shaft. The play would be perceptible if it existed.

We are inclined to believe the most of your trouble is where the steering arm is clamped to the worm gear shaft. If the bolt is drawn tight and there appears to be no gap between the two sides on the end, remove the arm, place it in a vise, draw the two sides together and saw through with a large-sized hacksaw to make a bigger slot. This will permit the steering arm to be clamped rigidly to the worm shaft. If this does not remedy the matter and you have set your eccentric, your trouble is likely to be in the key between the steering post and worm.

To correct wear or lost motion in the steering gear you first loosen the bolt which clamps the steering column adjusting nut and turn the notched adjusting nut A, Fig. 7, to the right until all up and down motion of the steering column has disappeared. Turn the wheel to the extent of its travel in either direction, and after loosening the nut on the eccentric bushing clamp stud as shown at B in Fig. 8, turn the eccentric bushing until all motion between the worm and the worm wheel is taken up. Then clamp the sleeve tightly again. It is advisable to make this adjustment with the wheel turned to the extreme position because of the fact that the most wear occurs on the worm wheel in this position when the car is being driven straight ahead. If it were so adjusted that no motion were present at this point in its travel, it would be impossible to turn the wheel far in either direction without pounding.

If it is impossible to remove the lost motion between the worm and the worm wheel by adjustment of the eccentric bushing, remove the steering arm from the squared shaft, and after rotating the worm wheel through a quarter turn, replace the arm in a new position. This will present a new surface for wear. Then make the adjustment as instructed before and carefully tighten the eccentric bushing clamp stud.

Differences in Bearings

Q—Explain annular ball bearing, thrust bearing and shunt winding.
2—I have a Pierce-Arrow C-4. When the car tips to the right on a road the oil pressure goes down, although the oil intake pipe reaches to the right side of the crankcase. When descending a hill in high with the clutch engaged the oil pressure becomes very low. Why doesn't it remain the same as on the level, since the engine and the oil pump are turning over at the same speed?—Theodore McClintock, Kansas City, Mo.

1—An annular ball bearing consists of two steel races or rings with a series of steel balls between them. The outer ring has a flat outside surface and a groove on the inside, while the inside or smaller race has the groove on its outside and the inside is flat. The balls run in the grooves between the races and have a retainer to hold them in place. The inside, or smaller, ring goes over one shaft, for instance, and the outer, or larger race, inside the other moving member, each being held in place by some means, varying according to design.

For instance, take an ordinary buggy wheel, which will be well understood. The inner race would be placed over the axle or spindle. The inside of the hub of the wheel would be made to take the outer or

larger race and some means would be made to hold it in place. When the hub would be placed over the outer race a perfect bearing would result. An annular bearing is shown in Fig. 6. This type is designed to carry only a vertical load, but it is often placed where it must take care of thrust, or sidesway, as well, and there are many types of bearings that are made to carry both kinds of loads.

A thrust bearing is shown in Fig. 6. This is made usually by having several balls retained in a flat piece of bronze, of a diameter to meet requirements, and with a center hole to permit a shaft, for instance, to pass through. The rest of the bearing consists of two hardened steel thrust washers, one of which is placed on either side of the ball retainer, so that when an end load of any sort comes against the thrust washer there is practically no friction, inasmuch as this is relieved by the races turning against the balls.

In a direct-current dynamo or generator there are three classes—series, shunt and compound. In the series winding the coils on the field magnets consist of a few turns of large wire through which all the currents generated flow and are joined in series with the armature and external circuit. In the shunt winding the coils on the field magnets are of many turns of small wire arranged as a shunt to the external circuit so only a portion of the current flows through them. The compound is a combination of the two. In the shunt a portion of the current from the commutator is taken to energize the field magnets, connected therewith, as the term shunt denotes, while the major portion goes to the battery. The fraction of current goes from a brush at the commutator through the winding on one field magnet, then through the winding on the other field and back to the other brush.

2—No trouble like this should be experienced if you keep the correct amount of oil in the crankcase. There is a possibility that some sort of abrasive has found its way into the bearings and has cut them to the extent that there is sufficient room for the oil to work out, but these bearings, Pierce-Arrow states, will last 50,000 miles if the correct amount of oil is used at all times and nothing is permitted to cut them. If you were turning a corner at high speed, and the turn was made quickly, it might be possible to drain the oil well for an instant, but that is all. Try keeping the oil supply up and see if this does not correct the evil.

Air Cleaners for Cars

Q—Give names of firms making air cleaners and washers for engines.

2—Would the Bennett cleaner work on a Studebaker six?

3—What kind of cleaner does the Franklin car use? How is it made?—W. E. McKee, Montezuma, Iowa.

1—Wilcox-Bennett Carbureter Co., 1030 Marshall street, Minneapolis, Minn., Holley Carbureter Co., Detroit, and Donaldson Engineering Co., St. Paul, Minn.

2—Probably any air washer could be fitted to a passenger car, but there is no necessity for it. They are used on tractors because of the slow speed and the fact that dust envelops the machine when a dry field is being plowed or harrowed. In the case of a passenger car very little dust is accumulated, owing to the fact that usually the car is driven ahead in perfectly clear air and only when following closely behind another car does any great amount of dust enter the air intake of the carbureter.

3—Neither the Franklin nor any other passenger car uses an air washer so far as we are advised.

Friction of Various Drives

Q—By which method of transmitting power is the most lost by friction: Chain and sprocket wheel or spur gears?

2—Can the Holt tractors be purchased by individuals? Give the weight, horsepower rating and price of the caterpillar types.

3—Give the address of the company that makes Ford radiator covers similar to those on the Hudson Super-Six.—Lloyd Watters, Neillsville, Wis.

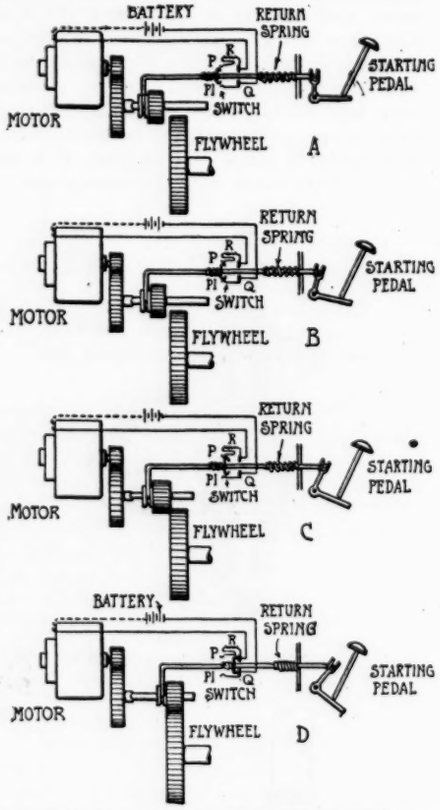


Fig. 10—Electro-mechanical connection of 1914 Marion starting system

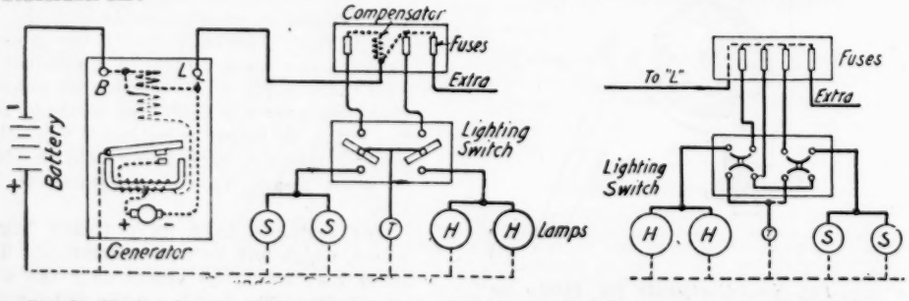


Fig. 9—Wiring diagram of the Westinghouse starting and lighting system used on the 1914 Marion. Left, connection with two-pole switch; right, connections with four-pole switch

1—All things being equal, perhaps a silent chain would offer a trifle less resistance or friction. Everything would depend upon design, bearings, accuracy of work, lubrication and the nature of the work to be performed, so that a test would be the only definite way of determining the matter.

2—This company puts out three different models. The weights are 5000, 9500 and 15,500 lb.; horsepower, 25, 40 and 70 respectively. The company does not give out the price, as this is subject to change under different conditions, etc.

3—Atlas Specialty Mfg. Co., 16-20 East Twenty-fourth street, Chicago.

Fitting Larger Wheels

Q—Could I fit 30-in. wheels instead of 28 and do an accurate piece of workmanship by using the same hubs?—W. E. Brewster, Baltimore, Md.

The simplest, cheapest and best way would be to buy a set of 30-in. Ford wheels made for demountable rims. You can procure this from supply stores or from the Firestone Tire & Rubber Co. You will get the set without hubs and all that is necessary to do is to use your Saxon hubs and fit the Ford spokes and rims to the hubs. This will give you the larger size and demountable rims at the same time. Remember you will be raising your gear ratio a little.

Case-Hardening Vanadium Steel

Clinton, Ind., Editor MOTOR AGE—I noticed in MOTOR AGE that a man wanted to know how to case-harden small parts made from vanadium steel. I would suggest that he take some cyanide of potassium, melt it, dip the heated parts in the molten cyanide and put back in fire and heat to a cherry red. Then throw them into water. This will give a thin hard skin to the parts.—George Arrosmith.

The Electric System

Vibrator or Heater

Q—Which of the following methods is the most practical and most effective: To attach a master vibrator and cut in to make a lot of hot spark, or to attach an electric warmer around carbureter?

2—Where can I get a master vibrator like the Franklin car now has?—R. P. Johnson, Gwinner, N. D.

1—Whether a master vibrator would assist you cannot be told without knowing the make of car. An air-cooled engine, like the Franklin, has more clearance than is required of a water-cooled engine, due to the greater expansion of the pistons and cylinders when heated, and naturally would be a little harder to start. It is to assist in starting that the Franklin uses the master vibrator in connection with the Atwater Kent system, as well as an electric warmer for the carbureter. If yours is a water-cooled car, we believe it will be unnecessary to add the master vibrator, particularly if some such type of igniter as the Atwater Kent is used. If you have a Ford, any supply house can furnish a master vibrator for it.

2—Probably any Franklin agency will be able to furnish this.

Generator Charges Excessively

Q—The Wagner generator on my Studebaker four, 1914 model, heats my battery too much on a drive of 50 miles or more, causing excessive evaporation. I am afraid the plates will buckle

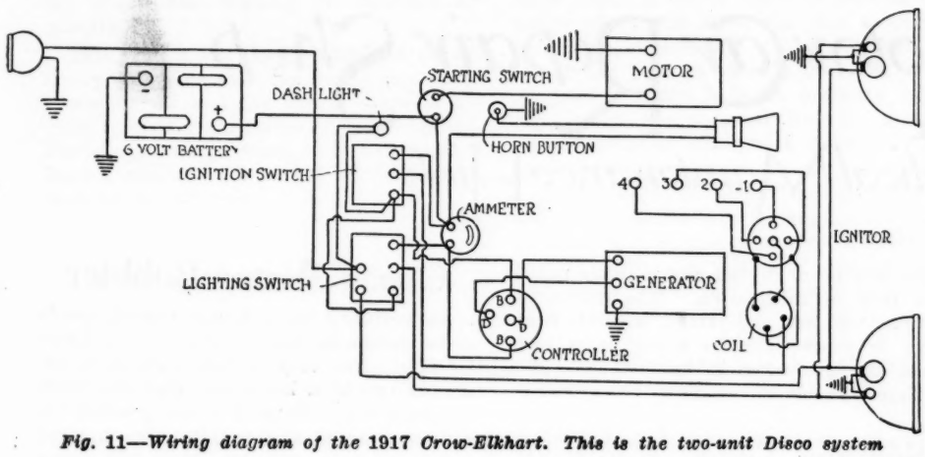


Fig. 11—Wiring diagram of the 1917 Crow-Elkhart. This is the two-unit Disco system

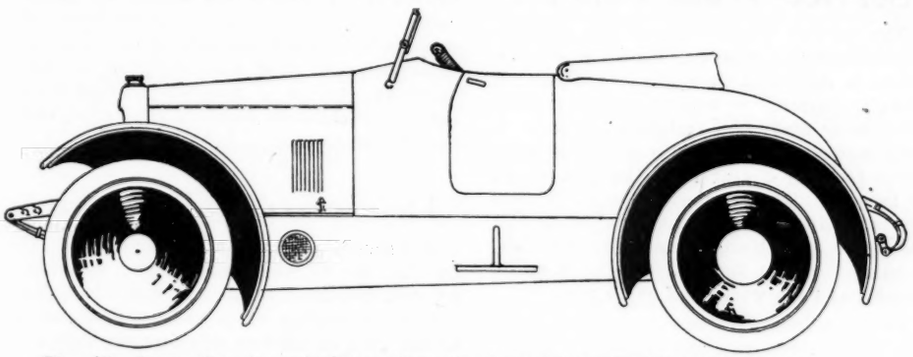


Fig. 12—Suggestion for rebuilding Maxwell Mascot into speedster type of car

and ruin the battery. Will it be feasible to insert a resistance coil with a switch in the charging circuit to cut down the current when on a long drive? If so, where do you advise installing it, between the generator and distributing panel or the panel and the relay or between the relay and battery? About what resistance would you advise using? The electrical system is a 6-volt.—Frank Benson, West Farmington, Ohio.

It is not always a good plan to make any change in the electrical equipment of a motor car without first consulting the makers of the electrical units. In your case the generator output is regulated by an arrangement of the brushes in relation to the commutator, and at high speeds the flow of current to the storage battery is cut down. The proper charging current may be observed by disconnecting the wire from the terminal A, Fig. 13, and connecting this wire to one terminal of an ammeter and wiring the other terminal of the ammeter to terminal A, as shown. The maximum current delivered by the generator does not exceed 15 amp.

Adjustment is made by turning the small screw on the front of the generator, but if you are not familiar with this sort of work you had better consult a Studebaker dealer or a competent electrical man. Run with your lights on. This will consume some of the excess current and prevent excessive charging until you consult someone.

Marion Electric Queries

Q—Show wiring diagram of 1914 Marion, model J 5-56.
2—Give instructions for regulating the generator output on this car. We have had trouble keeping the storage batteries above 4½ volts and at a point 1100 specific gravity.
3—What is the purpose of the small laminated iron core in the center of the main core? —Earl Barr, Monroe, Wash.

1—A diagram showing the lighting system of the 1914 Marion is shown in Fig. 9, and that of the starting system in Fig. 10.

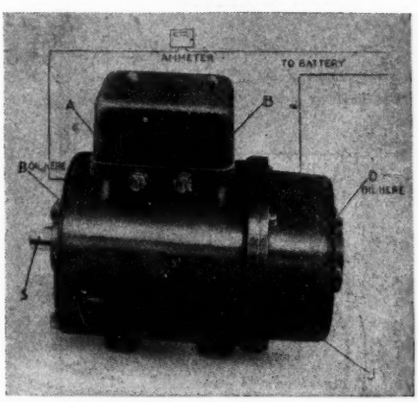


Fig. 13—Generator on 1914 Studebaker, showing ammeter for testing output

Fig. 14—Exterior view of Marion armature, showing commutator to which reader refers

2—When the generator is connected to the battery by the automatic switch, the current rises rapidly with the speed until a value of from 5 to 7 amp. is attained, if the lamps are not burning. Above this value the charging current rises slowly, as the speed increases but does not reach an excessive value at the highest speeds at which a car can be operated. This regulating feature is obtained by connecting the battery through a reversed compound field winding of the generator. It is, therefore, an inherent characteristic of the generator and requires no relays or other regulating devices.

Before attempting to change the charging rate look over the generator brushes and see if they make good contact for their entire length. Also see that the commutator is clean and that the mica insulation is not raised above the surface of the copper segments. This would cause poor contact of the brushes and consequently interfere with the charging of the battery.

3—Undoubtedly you refer to the commutator or the part on which the brushes rest. This is shown by A in Fig. 14. The armature windings are connected to the copper segments of the commutator.

Wants Different Generator

Q—What other generator could I use on my 1916 Saxon, four-cylinder? Name several. A Remy model 60 cut-out is used.
2—Is there a special equipment for a Bosch magneto like the one used on a Ford made by the Bosch company for this car?—W. E. Brewster, Baltimore, Md.

1—Almost any of the modern generators will be all right for this, if of the right voltage and adaptable to the base or mounting of the original one fitted. So far as possible try to get the same make of units, that is, if you should decide to use a Gray & Davis generator, use a Gray & Davis cut-out, etc. Consult the advertising pages of MOTOR AGE, where you will find a list of used generators of several makes.

2—Yes, the Bosch Magneto Co. makes a magneto to accommodate the Saxon roadster and can furnish a bracket and the necessary fittings to make the installation.

Crow-Elkhart Wiring

Q—Publish wiring diagram of 1917 Crow-Elkhart with two-unit Dyneto system.—C. F. Patry, Bengal, Minn.

A wiring diagram of the two-unit starting and lighting system used on the Crow-Elkhart is shown in Fig. 11.

Rebuilding

Rebuilding Maxwell Mascot

Q—Show design for rebuilding a Maxwell Mascot into a sport car.
2—Would you advise using wood, such as having several ribs and cross pieces of hickory and the sides and deck of yellow poplar or California redwood. In view of the fact that formerly all vehicles were made of wood and were driven over very rough roads and the bodies held together for twenty or thirty years, I feel that a wood body would be more substantial and just as light as metal.—Y. G. Sorter, St. Louis, Mo.

1—This is shown in Fig. 12.

2—What you say is true so far as it goes, but you refer to horse-drawn vehicles. There can be no comparison between horse-drawn vehicles and those propelled by gasoline engines. The former naturally travel at best at an average of perhaps 8 m.p.h. or less, whereas a motor car seldom gets under 15 m.p.h., and generally much faster than that. On a bad road a horse would be permitted to walk about 4 m.p.h., and it is easy to see that a vehicle striking a hole or a log in the road while going at that gait would not much more than move the springs.

Motor car bodies were, years ago, made mostly of wood, but not now. Sheet metal is more easily handled, will stand twists and strains better, will not warp like wood, will take and hold paint almost as successfully and will not tend to separate at the joints so readily.

The Motor Car Repair Shop

Practical Maintenance Hints

Cold Weather Lubricants

SERIOUS damage may befall a car by not giving attention to the quality of the lubricants used all through, from engine to transmission and back axle, when cold weather sets in. It is more than possible—quite probable—that something may snap, particularly when the steel has become chilled.

During the cold spell of a short time ago a case was noted where the car owner, a most experienced man at that, was compelled to run his engine half an hour to transmit sufficient heat to soften the grease in the transmission before he could engage the gears. An inexperienced driver would likely have attempted to force the gears into mesh and would have had the trouble and expense of having new gears installed.

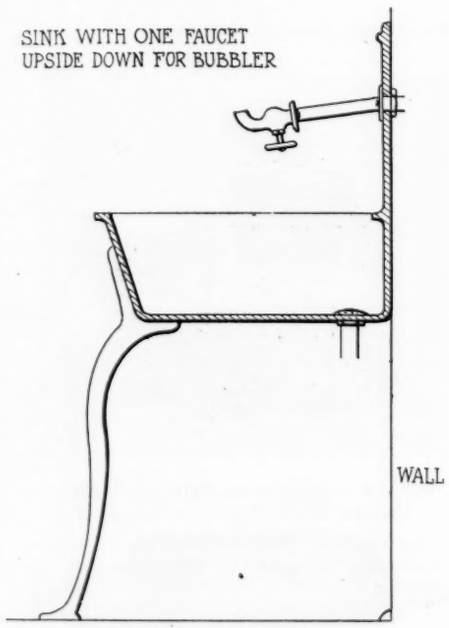
When a car has been standing for several hours in intensely cold weather every particle of grease or oil congeals and becomes extremely heavy, tending to hang on to anything with which it comes in contact. This heavy grease, in the transmission, for instance, will not pass between the teeth of the gears and naturally must act as a clog and a drag.

When cup grease is used in the transmission or differential it is well to add ordinary lubricating oil to thin out that which is already in place. Even 600W will become so heavy it is almost impossible to move the parts and cup grease will set still harder. Besides, there is danger in the heavy grease not finding its way to those parts that need lubrication, for the gears merely will cut a path through the grease, and none will be in a state to fall into the teeth and be carried around, whereas the lighter oil will follow the gears readily and also will gradually thin out the grease to permit it to work satisfactorily.

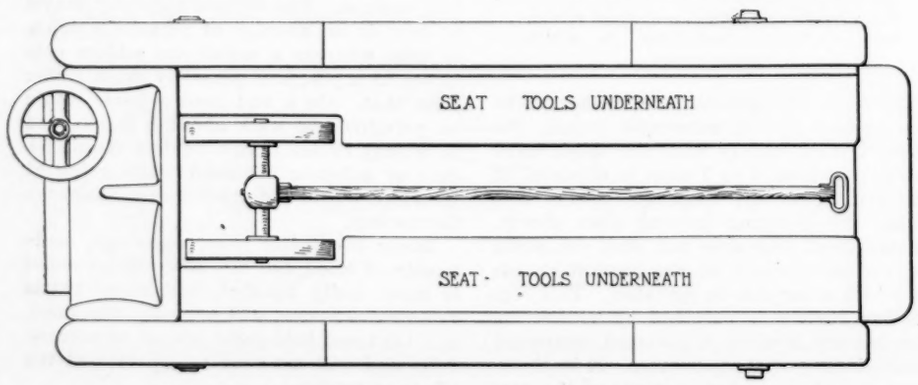
Before cold weather has set in part of the heavy grease should be removed and oil substituted, so it will have opportunity to soften the remaining grease and work its way to all oil holes or bearings that otherwise will be neglected and perhaps ruined for lack of lubrication. The driver, of course, will not understand why his bearings or gears or some other parts have been damaged when he knew there was a sufficient supply of grease.

Service Truck Feature

The service truck used by the Cadillac Automobile Co., Boston, Mass., is conventional in design at first glance but further investigation shows an interesting method of stowing away the ambulance truck. A long, narrow tool box with an upholstered cover forming a seat runs the full length of the car. The tongue of the ambulance is placed in the aisle space between and the truck itself being wider than the aisle, is placed at the forward end in a space which has been widened for the purpose.



Water bubbler made from an ordinary water faucet turned upside down



Service truck used by the Cadillac Automobile Co., Boston, Mass.

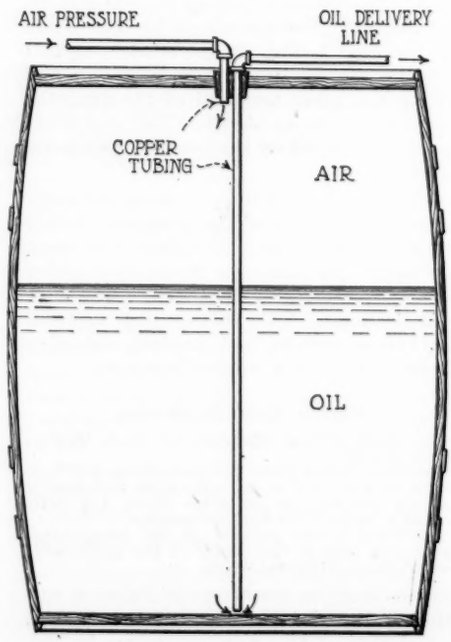
Cheap Water Bubbler

An ordinary water faucet turned upside down makes an admirable drinking water bubbler. For easy accessibility it is desirable to add a horizontal pipe extension of about 6 in. Thus it is much easier for a man to reach and enables him to more satisfactorily quench his thirst. It seems hardly necessary to urge the expediency of this device from a sanitary standpoint, as it is believed that the abolition of the drinking cup is a necessary precaution against contagious diseases that everyone appreciates.

Delivering Oil by Air

A barrel quickly may be emptied of oil by the use of compressed air. The apparatus required to do the work is quite simple, consisting of a wooden cork with an air and an oil line running through it. The air tube terminates right inside the cork, while the oil tube runs to the base of the barrel. As soon as the air pressure is turned on the oil begins to flow.

The illustration shows the cork in the top of the barrel, but quite often it will be found more convenient to use the bung hole in the side. Compressed air is a quick and convenient means for emptying any oil barrel at any time, but it is particularly useful where the oil storage tank is not situated so that it may be filled by gravity. In fact, this system eliminates the objections to an overhead oil storage system, which has the advantage of sav-



Emptying oil by compressed air

ing space and making oil delivery by gravity.

This system also may be used for oil delivery, in which case the barrel is used to store the oil and the air pressure is applied whenever a measure of oil is required. For accurate regulation it is desirable to have a shut-off cock on the oil delivery as well as the air line.

Valve Spring Tester

When a valve spring is suspected of weakness a rough and ready method of determining whether this is so or not is to pry the coils apart with a screwdriver while the engine is running and note whether this improves the operation of the engine.

A more accurate method and one which is also of use in testing new springs before they are installed just to make sure that the measure up to requirements is to weigh the spring, that is, to apply a certain weight to it and measure how much it is compressed thereby.

The amount differs with every spring, but careful service station men find that it pays to get this information from the factory. There are many types of weighing devices, but perhaps the simplest and cheapest consists of a weighted box running in guides with a mounting underneath for the valve spring. The weight of the box and the material in it being known, the test consists merely of putting the spring in place, lowering the weight on it and measuring the amount that the spring is depressed with a scale.

Spark Plug Tester

It should be common knowledge that often when a spark plug is tested it will work all right under atmospheric pressure but will not operate under the engine compression. For this reason some repairmen have found it worth while to construct a tester which will allow the plug to be observed under pressure. There are various types, but perhaps the simplest and most compact is made from an ordinary valve cap which has screwed onto it a cup-shaped member fitted with a heavy plate glass window.

A tire valve is fitted into one side so that air pressure may be applied, and the pressure may be tested also by a tire gage at this point. In testing a plug the first step is to screw the plug into place and then apply pressure, using a gage to determine when the desired compression is reached. Then the plug is connected to the ignition system. It should be noted that for reasons of maximum strength the window is not made more than ¾ in. in diameter although glass ¼ in. thick is strong enough to withstand a much larger unsupported area.

Fitting Tire Chains

Care in fitting and applying anti-skid chains will be rewarded by longer life to tires. Despite some opinions to the contrary it is poor practice to in any manner fit chains so tight they cannot slip slightly. The makers will advise against the use of springs to hold the side chains from movement, for with the side chains drawn up closer together by any means the cross chains are brought snugly against the tires and they cannot move in the least, whereas they should.

After a chain has been used a little bit will have worn where the links are joined and there will have been some stretch, with the result that one or two links on both of the side chains can be removed. It will be perfectly safe to take out as many side chain links as possible so long as the connectors can be brought together without the aid of more force than can be exerted by the hands.

This tension will be sufficient to avoid any part of the chain hitting the fender unless the latter is extremely close to the tire or a cross chain breaks. In that case the cross chain should be immediately cut out. Then the side chain can be drawn up another link to make up for the additional give to the chain.

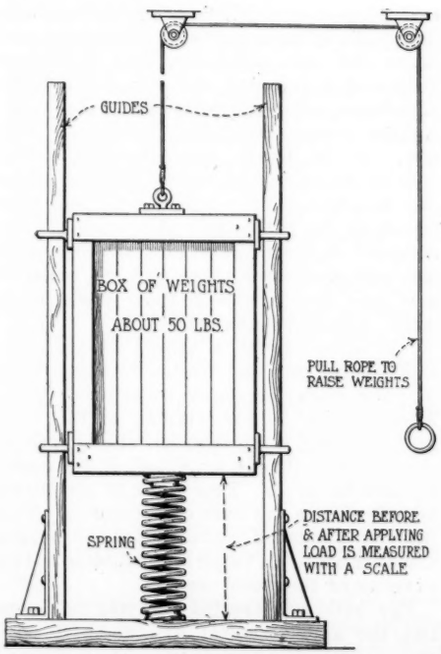
Where some means of tension is used to hold the side chains taut the cross chains naturally remain in one place, and the tendency is to wear the tire in a particular spot. More damage comes under such circumstances if a car is permitted to stand a long while and freezing has taken place in the meantime. The result is the cross chain is frozen firmly between the tire and the ground, and when the car is started a section of the tread is pulled out and the whole tire is badly crippled. On the other hand with loose cross chains there is more chance to give and not hurt the casing.

Crankpin Jig

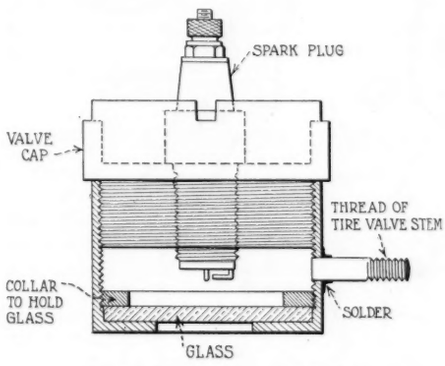
To true up the crankpins of a crankshaft in a lathe it is necessary to use a jig at each end so that the crankshaft may be swung on the line of the crankpin centers instead of the center line of the shaft. A piece is bolted to the flange end of the shaft with a hole for the lathe center in a direct line with the crankpin centers. The jig on the other end is slipped over the taper which carries the timing gear and is held in place by the same nuts which retain the timing gear.

Quick-acting Jack

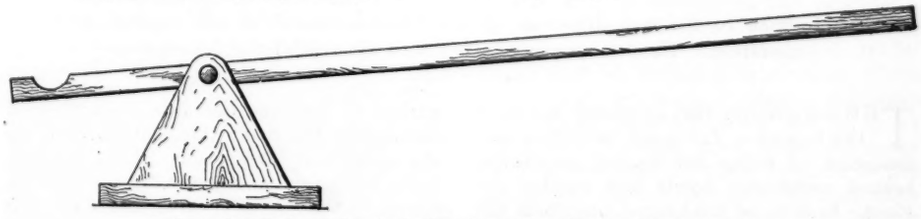
With the long-handled wooden jack shown it is only the work of a moment to raise the wheel of a car, since it is only necessary to slide the tip of the jack under the axle and then give a single downward push on the handle. Such a jack will save an enormous amount of time and energy around a tire repairshop and of great use in any shop.


GUIDES
BOX OF WEIGHTS
ABOUT 50 LBS.
PULL ROPE TO RAISE WEIGHTS
SPRING
DISTANCE BEFORE & AFTER APPLYING LOAD IS MEASURED WITH A SCALE

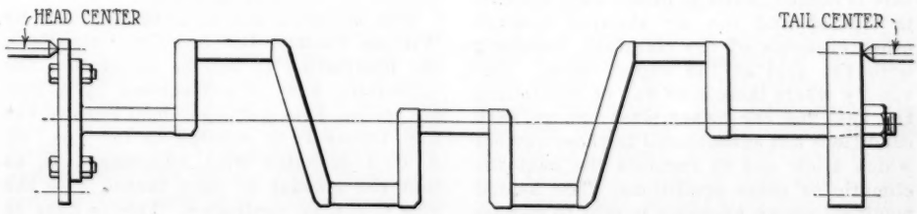
Apparatus for weighing springs



Shop-made tester for spark plugs



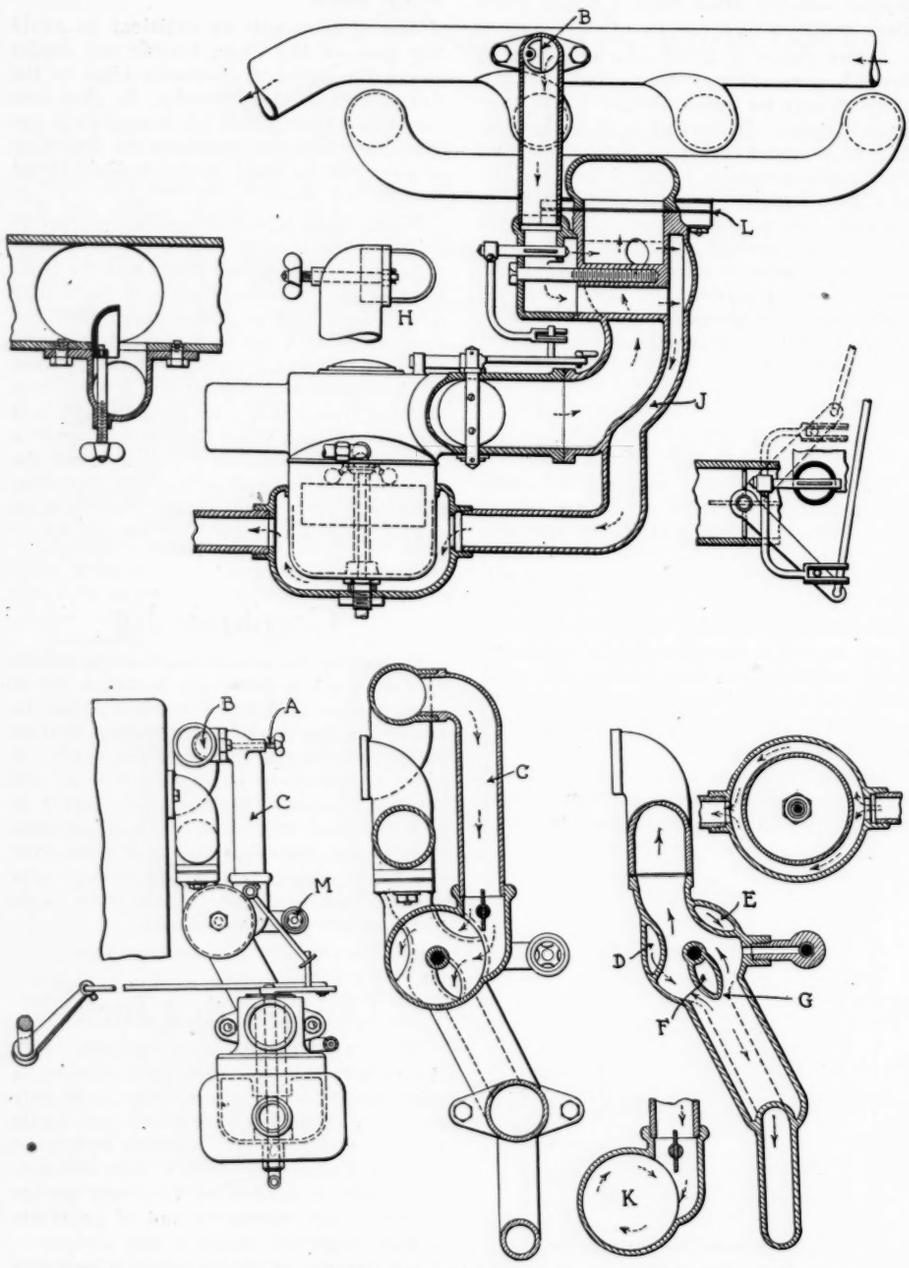
Long-handled wooden jack that is quick-acting and saves enery



How to use a jig to true up crankpins of a crankshaft

Heated Manifold Which Is Controlled

Can Change According to Climatic Conditions



Reference to the two drawings of the Thomas manifold will explain its operation. The letters are referred to in the text of the description

THE low-gravity fuel of to-day has been the incentive for many inventors and designers to bring out heated manifolds, heated carbureter bowls and similar devices. In some of the heated manifolds the construction is such that the whole mixture is heated, while in others only the fuel is treated and the air shunted through other branches of the manifold, reuniting with the fuel at the engine ports. Obviously where there is no way of controlling the heat the car owner must put up with conditions not encountered in those devices which allow one to regulate the heat for climatic or other conditions. The heated manifold shown herewith is said to possess certain features not found in the devices similar in that the operator is capable of controlling the heat, thus not burning up the mixture at high speeds. Also, the butterfly valve controlling the heat works opposite to the throttle valve and does this automatically, giving at all times the right amount of heat, it is stated.

This manifold has been brought out by William Thomas, Los Angeles, Cal. From the illustration it will be noted that the carbureter bowl is surrounded by a hot-air jacket, thus getting initial heat to the fuel before it is exposed to the air. At A is a deflector with adjustment B, so that the amount of heat turned into the pipe C can be controlled. This is done to permit various grades of fuel being used and to meet different climatic and temperature conditions. The heat from the exhaust must pass through openings D, E and F, and the incoming charge of fuel strikes the knife edge G, whereupon it is divided evenly and swirls against the opposite sides of the manifold, cross currents and finally comes reunited at the upper neck.

Cone Pockets Heat

At H will be noted a cone which, it is stated, momentarily pockets the heat before it passes through J. This is done so that passages D, E and F are kept hot, especially when driving at low speed with the heat controlling butterfly valve wide open. The heat is also given a swirling effect, as shown at K, after which it passes through the passages D, E and F. An asbestos gasket is inserted at L. The function of this is to confine the heat at the point where it is most needed, namely, at the breaking-up point of the mixture at D, E and F. A priming valve is provided at M, and in practice a ½-gal. tank is installed on the dash to hold a supply of gasoline for priming in case heavy fuel like kerosene or distillate is used. After the engine is started on gasoline, it is claimed, the heavy fuel can be used, with better acceleration, fuel economy and a better running engine in general. It is stated that better than 30 m.p.g. have been secured in tests of this job. The manifold can be installed on a Ford engine in about ½ hr. From the illustration it will be seen that branch pipe C works in a slip joint for vertical adjustment, while lateral adjustment is obtained by simply loosening a set schew.

TRACTORS REPLACE HORSES

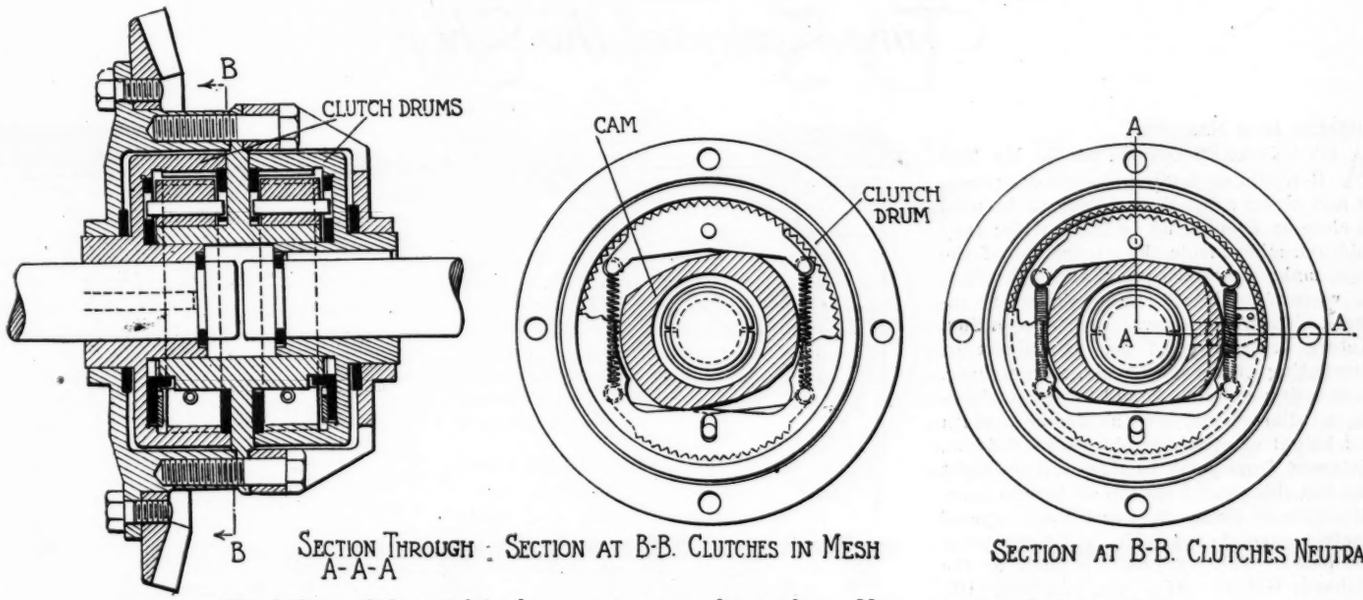
Peoria, Ill., Jan. 10—The end of the war was celebrated at the Holt tractor plant by reopening of the buildings and grounds to the public after a period of military supervision and close espionage. The employees dedicated a new flag, and the entire force of officers and employees served as a reception committee to the throngs of visitors. M. M. Baker, vice-president, delivered an address of welcome. He took occasion to pay a tribute to the employees who remained at their task and enabled the company to promptly fill all war orders and also welcomed back those who had enlisted and who are resuming their posts once more. Concluding he said:

"It is no doubt a source of satisfaction to you men and women to know that in your work you have contributed in a large measure to the winning of this war in furnishing a product so vitally necessary to the military activities of our country and her allies. Your work at this plant helped to save the lives of thousands. The tractors furnished replaced 642,000 horses and performed an important mission in the winning of the world war."

The buildings erected for war purposes and the added capital will make it possible for increased production of Holt tractors to be entered into.

Lidseen Differential Now Is Offered

Automatic Release Is Feature of Device



The Lidseen differential is the newcomer on the market. Here are several views of it

LIKE many other units of the motor car the differential has come in for its share of attention in the minds of designers, inventors and experimenters. Herewith are illustrations of the Lidseen differential, a product of a Chicago inventor. It affords a slip-friction member adapted to be forced by a driving part into frictional engagement with a driven part and capable of automatic release from the driven part when the speed exceeds that of the driven.

As will be noted from the sectional view of the differential there are what are termed clutch drums fixed by keys. Each drum is made with an inwardly-extending hub and outwardly-projecting hub. Teeth are cut on the inside of these drums.

Teeth on Clutch Members

Segmental clutch members are provided with clutch teeth similar to the clutch teeth of the drum. The number and dimensions of the teeth depend on the work to be done. At the ends of each segment is a rectangular opening and an end bar for attachment of one end of a spring. On the surface opposite the clutch teeth are formed oppositely-disposed straight cam faces.

A carrier consisting of a flat ring of suitable dimensions to afford a running fit is provided with elongated radial slots to receive the trunnions for radial movement.

What is termed a radially movable wedge has cam edges and a pin or arm disposed at right angle to the wedge. An anti-friction roller or sleeve is mounted on the pin. At the ends of each clutch member are attached coil pull springs, which cause the clutch members to assume disengaged positions.

The driving member consists of a circular plate between the open ends of the clutch drums, having axially aligned hubs or bosses, on opposite sides of which are formed straight cam faces for co-operation with other cam faces of each clutch member for power transmission in either direction. On one end of each of the hubs is formed an accurate recess in which one end of the arm is placed for travel.

The two halves of the rotatable housing are fastened together by bolts. The external annular flange carries the master gear, which is in mesh with the conventional pinion of the driveshaft. Bronze rings are carried by the two halves of the rotatable housing.

FORD TRADE MARK UPHELD

Detroit, Jan. 10—The trade-mark "Ford" when applied to the products of the Ford Motor Co. is something more than merely a name. So holds United States Assistant Patent Commissioner F. W. Clay in an opinion reversing the decision of the trade-mark examiner who refused to register the Ford trade-mark as the business slogan for a new line of rubber goods which Ford proposes to market.

The examiner based his refusal on the ground that names of individuals are not good trade-marks. He also sets forth that the original Ford mark was registered as a mark for engine and engine parts and avers that the same could not rightfully be registered in the present case because rubber goods were too different from the engines and parts for which the mark was originally registered.

Attorneys Barthel and Barthel, representing the Ford Co., appealed and asked the Patent Commissioner to pass upon the case on the ground that any trade-mark used for ten years prior to April 20, 1905, was registerable whether a good trade-mark or not. In their appeal the attorneys agreed with the Patent Office that as a general rule individual names were not good marks for trade. But in this case, they argued, it was different, inasmuch as the name Ford when applied to cars and kindred products, represented a standard and highly successful machine and, because of this reputation, was a much sought-for article.

They argued that the company had a right to the exclusive use of the name as a trade-mark and that it was legally within its rights to object to the use of the name "Ford" by anyone, even of the same name if used for the marketing of goods similar to those products or any other products which might result as the natural expansion of the Ford business, on the theory that the public would be deceived into believing that these articles were made by the Ford company and were endorsed by that company when, in fact, they were not.

Far-reaching Decision

The decision is far-reaching. It not only gives manufacturers of all well known products additional protection against trade-mark infringement, but it establishes a precedent by sustaining the contention of the attorneys that the Patent Office stand that names are not good trade-marks does not hold true in all cases. While it does not bar men of similar surnames from doing business under the same, it prohibits them from using their own name as a trade-mark for their product if the goods they market represent articles similar to the output of another firm having established a reputation and marketing its output under the same trade-mark.

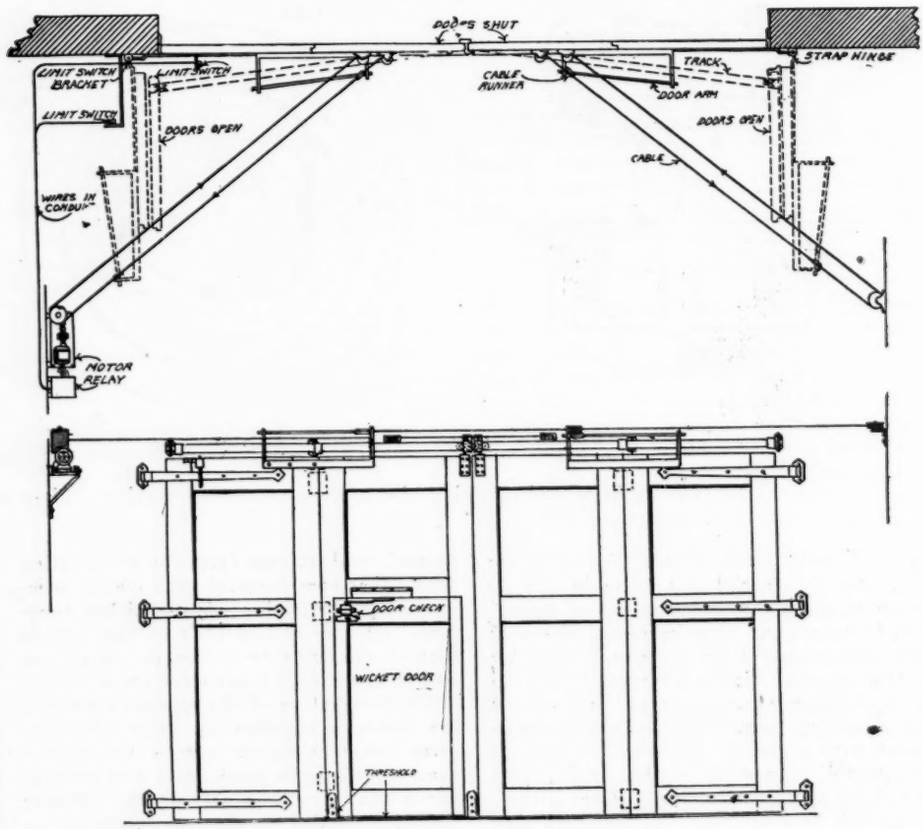
It is a final blow to the efforts of certain concerns to market motor car parts and accessories under the names of well-known companies. The Ford Motor Co. has not only had several cases of this nature to contend with but the Packard and Cadillac companies were also obliged to combat like attempts to infringe upon their name.

Service Equipment

Time Savers of the Shop

Slidetite Door Hangers

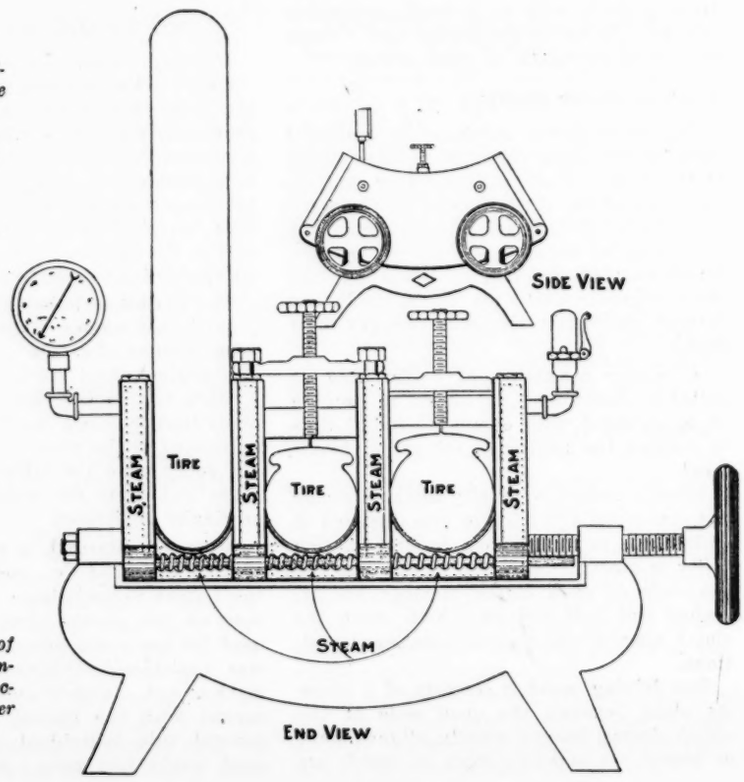
ADVANTAGES claimed for the No. 1035 R-W sliding-folding electric door opener and closer are: Four doors can be used to close an opening up to 12 ft. wide; they fold and slide inside the garage out of the way; make a weather-proof and tight flush fit when closed, etc. The sketch reproduced herewith shows the application. Motors are furnished for 110 direct or alternating current, 60-cycle, single-phase. In ordering a sketch should be given, showing all dimensions, such as number, width and height of openings, thickness of doors, distances from jamb to side wall on right and left sides and from top of door to nearest overhead obstruction or ceiling, type of electric current available, voltage, cycles and phase. This equipment is made by the Richards-Wilcox Mfg. Co., Aurora, Ill., which carries a complete line of garage door equipment.



No. 1035 R-W sliding-folding garage door equipment

Adjustable Sectional Vulcanizers

Combination adjustable sectional vulcanizers are made by Charles E. Miller, Anderson, Ind., in one-, two-, three-, four-, five- and six-cavity. The walls are adjustable, and the tread molds are removable. All the end walls, as well as the side walls, are accurately machined over the entire surface where bead molds and tire are placed. All the tread molds, as well as inside and end walls, are hollow to be steam-jacketed to obtain uniform heat while vulcanizing casings or tubes. The tread molds are made in all sizes from bicycle 1½ in. to motor car 5 in. inclusive. They are hollow to receive steam, with a hole passing through from one side to the other at the lowest point of the circle. Around this hole a chamber is milled, 1½ in. in diameter and ⅛ in. deep on either side of the molds. Heat can be localized by changing washers, admitting steam to one side only. The vulcanizers can repair a 15-in. section in one heat in all sizes of bicycle, motorcycle and motor car tires, and at the same time the one cavity will repair from four to eight motor car tires. The variety is due to the fact that the back side is stationary and the front sides are movable, so by tightening or loosening the two hand wheels the cavities can be entirely closed or opened to take the largest tires and tread molds placed according to requirements.



Cross-section of three-cavity combination adjustable sectional vulcanizer made by Miller

Garage Floor Cleaner

The J. B. Ford Co., Wyandotte, Mich., is marketing a metal cleaner which is intended to remove japan, shellac, paint, oils and greases preparatory to recoating or repairing. It also can be used as a garage floor cleaner, as it has the quality of cutting and cleaning oil and grease. It is supplied to the trade through jobbers in kegs and barrels, and one of the claims of the manufacturer is that so little of the product is required to do the work that its cost is practically negligible.

The Accessory Corner

New Fitments for the Car

Apco Horn Button

APCO Mfg. Co., Providence, R. I., is putting on the market a new type of horn button which fastens to the throttle lever under the steering wheel of a Ford car, where it can be reached easily by the driver. Apco products are sold by the jobbing trade, but the manufacturer sends particulars to dealers who are interested.

Half-Sole Tire

The Gates half-sole tire, made by the International Rubber Co., Denver, Col., costs half as much as a new tire and is puncture-proof, it is claimed. It is put on over the worn tire and adds ½ in. to the size. It is not sewed or vulcanized on, and neither is it a retread process. The half-sole is held to the rim in exactly the same way as the tire itself, by inflation pressure of 60 lb. to 100 lb. to the square inch. It covers every inch of the worn tire, protecting and strengthening it from bead to bead.

Hayes Vaporizing Manifold

The vaporizing manifold for Ford cars made by the Hayes Vaporizing Manifold Co., 3409 Superior avenue, Cleveland, Ohio, sells complete with primer and auxiliary air valve for $15. In operation the manifold is heated and as the gasoline passes along the globules are tumbled about until with the admixture of heated air it reaches practically complete vaporization. The fuel mixture is tumbled three times on its way to the cylinders, and heat is applied gradually until it reaches the highest point, which is just before it reaches the cylinders. The combination primer and auxiliary air valve is to make starting easy in any kind of weather.

Power Light Intensifier

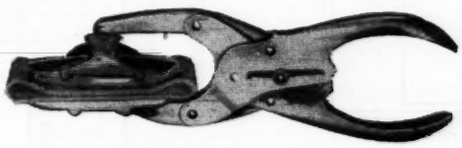
A power light intensifier for Ford cars is made by the Power Spark Intensifier Co., Watertown, S. D., and sells for $1 each. One plug takes care of both lights and is placed in the right lamp only. The same globes that Ford cars are equipped with are used. If the lights burn too brightly, in the case of an extra strong magneto, for instance, 12- or 14-volt lamps are recommended. Either lamp can burn out with the intensifier in use without affecting the other.

Tong-em-on

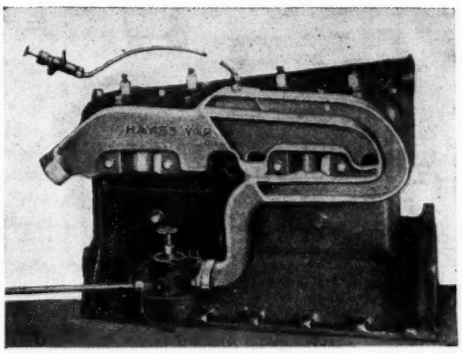
The Tong-em-on outfit consists of a nickel plated vulcanizing tong, puncture and blowout sizes of coppered pan and a dozen assorted fuses and patches. To vulcanize with this outfit, roughen the surface thoroughly, peel off one of the twelve gum patches from the stack that comes with each outfit and stick it to bottom of pan. Then remove cloth and use tong to apply them to spots to be repaired. Slide the floating rivet back in slot to hold tong closed. Put two of the twenty-four patented fuses into the pan and light with a match. Heat is generated without flame, so it is not possible to burn either the tube or the patch and with pressure limited to a grip of the hand thin places cannot be forced into the tube around the patch, it is claimed. The fuel is in solid form and is unaffected by wind and weather, making it possible for outside use or roadside repairs. The maker is the Tong-em-on Vulcanizer Co., 626 Plymouth building, Minneapolis, Minn.

Union Tire Chains

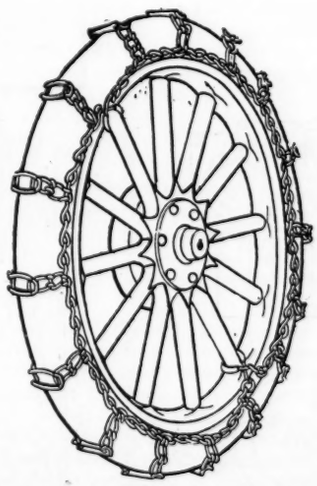
The anti-skid device made by the Union Chain Co., 122 North Fourth street, Minneapolis, Minn., is sectional and consists of quick detachable chains. The cross members consist of cup-shaped plates which grip the road or pavement. The wear comes on a large piece of steel, the plate, rather than on a few small links. The plates are made of special steel hard enough to stand unusual wear and not flatten out, at the same time not being brittle. The side chain is made of strong electric-welded chain. The plate is shaped to fit the contour of the tire and is constructed so that the sharp edges cannot come in contact with it. The inside is smooth, eliminating cutting. The construction permits the attachment of half the chain without jacking up the car, backing up or driving into the chains. Extra plates, ready to attach, can be furnished. Prices range from $3.50 a pair for 28 by 2½ to $15 for the 40 by 6.



Tong-em-on vulcanizing tong in action



Hayes vaporizing manifold attached, showing inner passages



Union tire chains, which are of quick-detachable construction

Tire Sub-Casing

The Rim-Grip sub-casing made by the Fisher Mfg. Co., Lincoln, Neb., is not claimed to be puncture-proof, but it has been demonstrated that its use will prevent tacks and glass from penetrating the inner tube and many larger objects are deflected. The sub-casings have endless steel bands vulcanized into their edges, the inner plies of fabric being folded around the bands and extended back over the sides. Those for all 3-in., 30 by 3½ and 31 by 4-in. tires have three plies of fabric at the tread and four at the sides. All other 3½ and 4-in. sub-casings have four plies at the tread and five at the sides. Sub-casings for 4½ and 5-in. tires have five plies at the tread and six at the sides. The extra ply is that folded around the metal band. Each is covered on the outside with a ply of high-grade rubber gum vulcanized on. The bands in each edge of the sub-casing are electrically welded together.

Side Curtain Sets

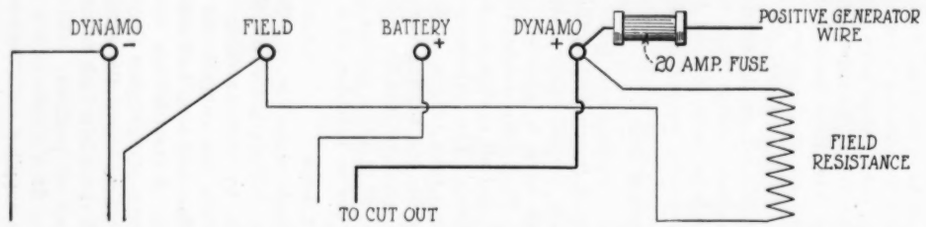
The side curtain sets made by the Cleveland Top & Specialty Co., Cleveland, Ohio, for Fords are of heavy rubberized material and have a generous allowance of lights. They are made to fit the car exactly, and all eyelets are furnished with the curtains. The curtains are made for all the models from 1913 to 1918. Regular side curtains for the touring car cost $15.50 a set; for runabout, $10.50; roll-up style back curtains, $4.50 each; rubber back stays for touring car or roadster, $5 a pair.

Monarch Lock

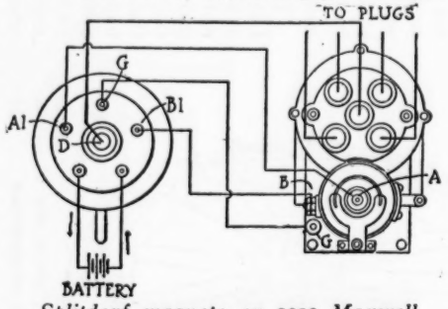
The lock made by the Monarch Auto Lock Co., 361 Market street, Kenosha, Wis., operates by disconnecting the steering wheel from the column, the wheel being moved forward 4 in. and disengaged from the post. A steel bolt is inserted through the column at the same time so that it is impossible to move the column. A Yale cylindrical tumbler lock is used to lock the parts out of position. Driving lugs are made to fit all cars and a new steering wheel is supplied with the outfit.

Motor Age Wiring Diagram Chart No. 11

Maxwell Models

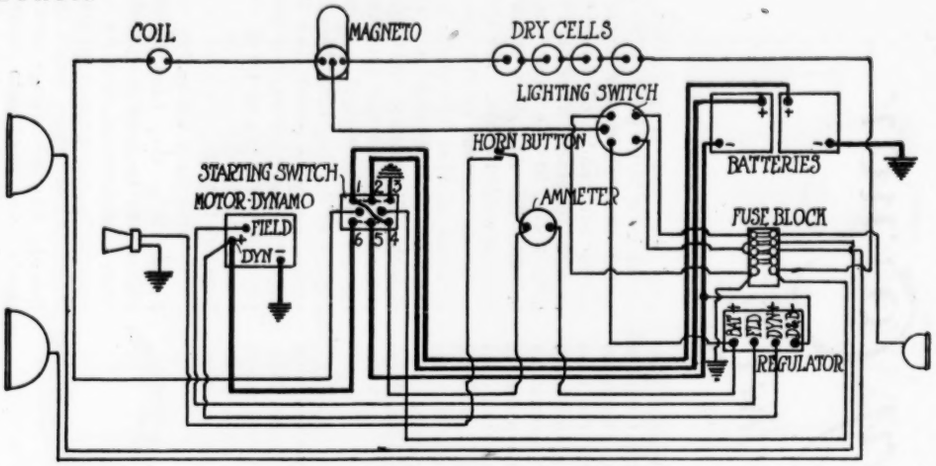


Manner of connecting fuse in 1916 Maxwell in positive line from generator

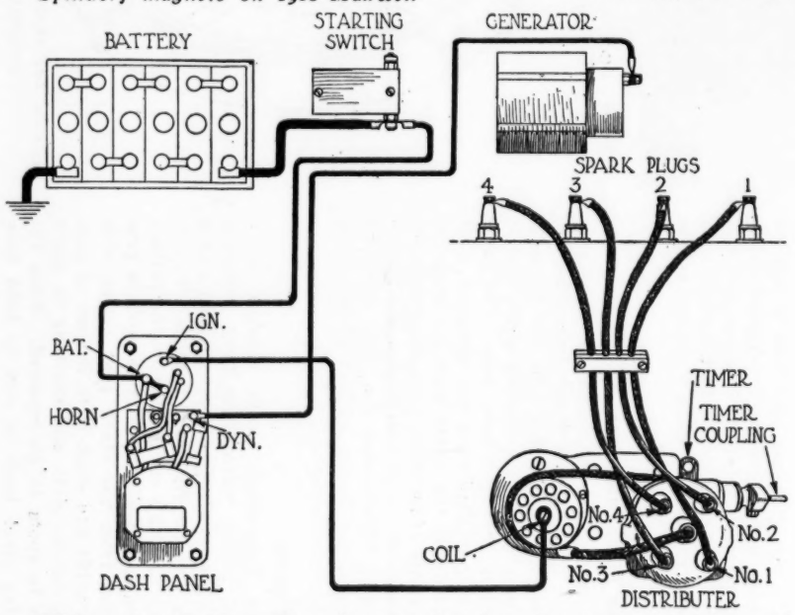


Splitdorf magneto on 1910 Maxwell

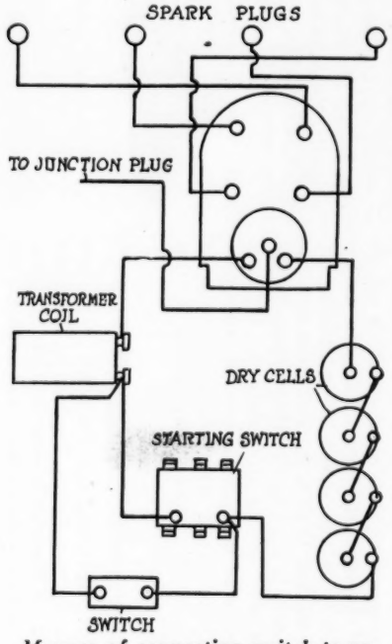
Alter—Nov. 14
Buick—Nov. 21
Cadillac—Dec. 19
Chevrolet—Nov. 28
Dodge Brothers—Dec. 12
Hudson—Dec. 5
Mitchell—Jan. 9
Oakland—Jan. 2
Overland—Nov. 7-14
Scripps-Booth—Dec. 26
Studebaker—Dec. 26



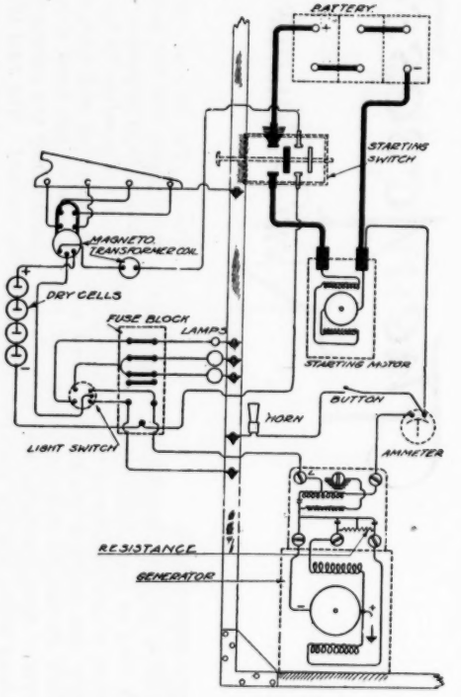
Simms-Huff system on 1915 Maxwell



Wiring of 1918 Maxwell engine, showing how the starting, lighting and ignition systems are connected



Manner of connecting switch to replace starting switch on Maxwell 25



Gray & Davis on 1915 Maxwell

Among the Makers and Dealers

Short Trade Notes

NEW Kelly-Springfield G. S. M.—John Baker, Jr., has been appointed general sales manager for the Kelly-Springfield Motor Truck Co., Springfield, Ohio.

Pierce-Arrow Declares Dividend—The Pierce-Arrow Motor Car Co. has declared the usual quarterly dividend of $1.25 a share, payable Feb. 1 to stock of record June 15.

Champion Machine Adds to Plant—The Champion Machine & Forging Co., Cleveland, Ohio, has purchased a block of land adjoining its plant and a forge shop is now being erected.

Denby Opens Permanent Export Office—The Denby Motor Truck Co. has established a permanent export office in New York with G. W. Worden in charge. Mr. Worden has handled the foreign business from the factory for some time.

Fox Returns to Saxon from War—C. L. Fox, assistant sales manager of the Saxon Motor Car Corp., Detroit, has returned from the officers' training school at Jacksonville, Fla., where he was in training in the Motor Transport Corps, and will resume his work.

Williams is Gilmer General Manager—Fred D. Williams, formerly head of the power specialty department of the H. W. Johns-Manville Co., has been appointed general manager of the L. H. Gilmer Co., maker of automotive equipment.

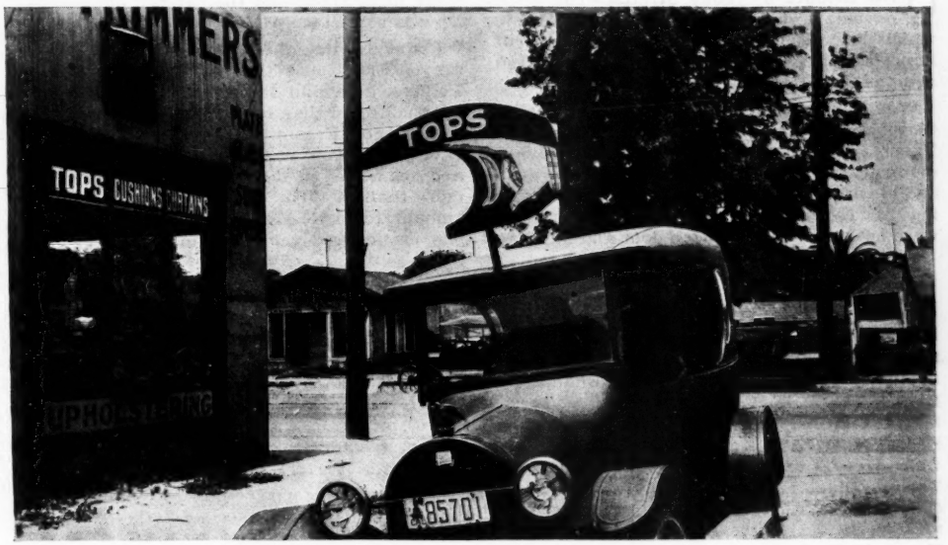
Cravath Becomes Hession Sales Manager—L. B. Cravath, sales manager of the Hession Tractor & Tiller Co., Buffalo, N. Y., has just been appointed general manager to succeed C. S. Mooney, who resigned. Production at the Buffalo plant has been practically doubled within the last month.

Treviranus to Manage Gemco Sales—George H. Treviranus has been appointed sales manager of the Gemco Mfg. Co., Milwaukee, Wis., to succeed L. A. Raasch, who resigned to become affiliated with Walden-Worcester, Inc. Mr. Treviranus has been the advertising and export manager for the last two and a half years.

H. S. Firestone Has an Anniversary—Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, reached his fiftieth milestone last month, and the foremen, department managers, factory managers and executives of the Akron organization gave a banquet for him in honor of the occasion. Between 600 and 700 attended. A birthday cake with fifty candles was cut.

Stinson in New Tractor Plant—The Stinson Tractor Co. is commencing operations in its new assembling plant at Superior, Wis., with a force of about sixty operatives. The work of equipping the former plant of the Continental Motor Truck Co. in Superior has been completed and material and parts have been provided in sufficient quantity to insure a daily output of one tractor, which will be increased as rapidly as equipment and stock permit.

Falls Increases Output by Addition—The Falls Motor Corp., Sheboygan Falls, Wis., is placing in operation an addition representing an investment of more than $225,000, enabling it not only to increase its output of passenger and commercial car power units but also to engage in the production of a special tractor-type, heavy-duty engine. A considerable volume of business in the new tractor engine has been booked and, with the other orders now in hand, the operation of the enlarged plant at full capacity for many months ahead already has been assured.



ADDING NOVELTY TO TOP SIGN—This is the sign on the job all the time the owner's car is in front of his place of business. Fastened to the bottom of the sign and extending downward is a flat strip of iron, the lower end of which has been bent. On the under side of the top of the machine is a metal slot, the proper size and shape to accommodate the bent portion of the strip of iron attached to the sign. Whenever the manufacturer of the top is going to remain in his office for an hour or so he runs his car up to the curbing and arranges the sign in place above the top of the car, when the sign points directly to the plant. It may be arranged in place or removed in 30 sec.

From Des Moines to Omaha Branch—T. J. Needham, manager of the Des Moines branch for the United States Rubber Co., has been made manager of the Omaha branch.

Troesch is Made Export Manager—F. C. H. Troesch, formerly in the export department of the Firestone Tire & Rubber Co., has been made export manager of the American Rubber & Tire Co., Akron, Ohio.

Doolittle Joins Sunderman Carbureter—A. H. Doolittle, formerly sales manager of the Zenith Carbureter Co., has joined the Sunderman Corp., Newburgh, N. Y., as secretary, with the duties of general manager.

Westinghouse Department is Moved—The Westinghouse plant at Newark, N. J., is devoted now to the making of electrical equipment for motor cars, this department having been moved there from Shadyside, Pa.

Goodyear Transfers Branch Manager—R. E. Green, manager of the Des Moines branch of the Goodyear Tire & Rubber Co., has been made manager of the Chicago branch and is succeeded at Des Moines by Larry Briggs of Milwaukee, Wis.

Parts Maker Increases Capital—The Milwaukee Forge & Machine Co., organized several months ago by Milwaukee, Wis., interests to manufacture automotive parts, specializing in tractor material, has increased its capital stock from $150,000 to $250,000. The company recently completed a new machine and forge works, and the new issue is made to provide ample working capital. Officers of the company are: President, George B. Pillar; vice-president and treasurer, John Eckert; secretary, Paul J. Ramstack.

Townsend Adds Capital—The Townsend Mfg. Co., Janesville, Wis., manufacturer of tractors, portable and stationary gas and kerosene engines, has increased its capital stock from $125,000 to $175,000. A large plant addition has been completed and placed in operation.

Accessory Maker Increases Capacity—The A. B. & B. Specialty Co., Milwaukee, Wis., manufacturer of motor car accessories, supplies and parts, has awarded contracts for the erection of a two-story brick factory addition, 50 by 100 ft., to provide much-needed facilities to relieve congestion in the present quarters.

Seventy Gold Stars for Goodyear—The honor roll of the Goodyear Tire & Rubber Co., now contains the names of seventy men who gave their lives for their country. A little more than 1 per cent of the men who joined the colors from this big plant made the supreme sacrifice.

Howlett to Manage Monitor Drill—S. H. Howlett, formerly manager of the Adriance-Platt Co., Poughkeepsie, N. Y., a branch of the Moline Plow Co., has been appointed manager of the Monitor Drill Co., Minneapolis, Minn., also a branch of the Moline concern.

Hood Sells Detroit Interests—Wallace C. Hood has disposed of his interests in the Foster-Hood Sales & Service Co., Detroit, to his partner, James H. Foster, who will continue to operate the business. The former has acquired an interest in the Noyes-Killey Motor Co., Kansas City, Mo., and will act as manager of that company's Kansas City branch, which will distribute the Paige.

From the Four Winds

Glimpses at the World of Motordom

Ohio Bridges a Muddy Stretch—The brick pavement between Canton and Akron, which has been one of the worst pieces of important highway in northern Ohio, has been completed and is now open to the public.

Would You Call Him a World Beater?—Clarence Rogers, a salesman for Russell P. Taber, Inc., Hartford, Conn., has been driving motor cars for thirteen years and has just had his first puncture, he says. He was backing his car into a garage where workmen were hanging a new wooden door and had left some nails about and the car ran onto them. This is some record!

Pennsylvania 1918 Licenses 675,519—Thus far 106,000 license tags have been issued in Pennsylvania and $500,000 more already has been collected than for a corresponding period a year ago. Fees already received amount to $1,502,000. The increase in the number of licenses issued in 1918 amounts to 25 per cent more than in 1917. Total collections for 1918 amount to $4,048,176.50. Licenses issued for pneumatic-tired vehicles number 362,950 and for solid-tired vehicles, 31,183. Including licenses for motorcycles, drivers and other licenses, the bureau issued during the year a total of 675,519 licenses.

Columbus Club Adds 1168 Members—In the annual report submitted by the officers of the Columbus Automobile Club, Columbus, Ohio, it was announced that the membership had been increased during 1918 by 1168. This is the record, as the new members received in 1917 numbered 780.

The Meanest Jitney Driver Found—Hartford, Conn., is said to possess about the meanest jitney driver on top of the earth. At least the police think just about this way about an individual who taxed a policeman 50 cents for driving him around the block the other day to head off a witness of an accident. The jitney driv r informed the policeman that he had been fined in police court a few days before and he thought he ought to collect when he got the chance.

Ohio Registers 415,000 Cars—Based on the normal increase from year to year and also on the unusually large number of applications for registration received by the department, Registrar W. A. McCurdy believes the department will issue more than 500,000 licenses this year. The total number for 1918 was approximately 415,000. The revenue for the department for 1918 totals about $2,500,000. During 1918 Cuyahoga county showed up with the most cars, 61,087; Hamilton county was second with 23,200; and Franklin county third with 19,312. Next in order are Lucas county with 15,197, Mahoning county with 13,992, and Stark with 10,783.

Packard Gives Returned Soldier Preference—Packard will give preference to the returned soldier's application for re-employment. More than 3000 Packard employees have left the factory to serve in the Army, Navy or in other departments of the Government. An employee who left to engage in Government service, and who has been honorably discharged, will receive preference over other applicants for any vacancy which he may be competent to fill. Whenever possible, Packard employees honorably discharged from uniformed service will be assigned to their former positions or to work equally remunerative. If they are not able to resume their former occupation, every effort is to be made to place them in accordance with their present ability.

All-Winter Road to Niagara Falls—An all-winter road between Buffalo and Niagara Falls, N. Y., is assured for the first time as a result of a permanent association just formed by clubs and commercial organizations in Buffalo, Tonawanda, North Tonawanda and Niagara Falls. Funds contributed by these organizations have been given to the Niagara county superintendent of highways, who has given assurance that there will be a passable road at all times. The route which will be kept open is Delaware avenue to Tonawanda and the River road to the falls. These are the officers of the new organization: President, Orsin E. Yeager, Automobile Club of Buffalo; vice-president, A. G. Potter, Niagara Falls Automobile Club; secretary, Alva F. Gluck, Niagara Falls Automobile Club. This route is one of the most traveled in the United States and usually is blocked during many winter weeks by snow drifts.

Coming Motor Events

SHOWS

Los Angeles, Cal.	Motor Car Dealers' Association, automotive	Jan. 11-18
Spokane, Wash.	Automobile Chamber of Commerce	Jan. 15-18
Dallas, Tex.		Jan. 16-18
Milwaukee, Wis.	Milwaukee Automobile Dealers, Inc.	Jan. 24-30
Fargo, N. D.	Implement Dealers' Association, tractors	Jan. 22-24
Chicago	Automobile Trade Association, cars	Jan. 25-Feb. 1
Toledo, Ohio		Jan. 27-Feb. 1
Chicago	Automobile Trade Association, trucks	Feb. 3-6
New York	Automobile Dealers' Association, cars	Feb. 1-8
Fargo, N. D.		Feb. 5-8
San Francisco	Motor Car Dealers Ascociation	Feb. 6-5
New York	Automobile Dealers' Association, trucks	Feb. 10-15
Albany, N. Y.	Automobile Dealers' Association	Feb. 15-22
Cleveland, Ohio	Automobile Trades Association	Feb. 15-22
Rochester, N. Y.	Automobile Dealers' Association	Feb. 15-22
Louisville, Ky.	Auto Dealers' Association, automotive	Feb. 17-22
Newark, N. J.	N. J. Auto Exhibition Co.	Feb. 15-22
Minneapolis, Minn.	Northwestern Automotive Exposition	Feb. 15-22
Des Moines, Iowa	Automobile Dealers' Association, automotive	Feb. 17-22
Grand Rapids, Mich.	Automobile Business Association	Feb. 17-22
South Bethlehem, Pa.	Lehigh Valley Auto Shows Co., cars	Feb. 17-24
Wichita, Kan.	Wichita Tractor and Thresher Club	Feb. 18-22
South Bethlehem, Pa.	Lehigh Valley Auto Shows Co., trucks	Feb. 24-27
Springfield, Mass.	Cars and trucks	Feb. 24-March 1
Kansas City, Mo.	Motor Dealers' Association, cars	Feb. 24-March 1
Kansas City, Mo.	Kansas City Tractor Club, tractors	Feb. 24-March 1
Portland, Ore.	Dealers' Motor Car Association	Feb. 24-March 1
Cedar Rapids, Iowa		Feb. 24-March 1
Detroit	Automobile Dealers' Association	March 1-8
San Francisco, Cal.	Motor Car Dealers' Association	March 1-10
Columbus, Ohio	Automobile Show Co	March 3-8
Buffalo, N. Y.	Automobile Dealers' Association	March 3-8
Quincy, Ill.	Automobile Trade Association	March 5-8
Omaha, Neb.	Automobile Trade Association, automotive	March 10-15
Syracuse, N. Y.	Automobile Dealers' Association	March 10-15
St. Joseph, Mo.	Dealers' Association	March 12-15
Boston, Mass.	Automobile Dealers' Association, cars	March 15-22
Brooklyn, N. Y.	Motor Vehicle Dealers' Association, cars	March 22-29
Trenton, N. J.	Auto Trade Association	March 22-29
Brooklyn, N. Y.	Motor Vehicle Dealers' Association, trucks	April 1-5
Montreal, Canada	National Motor Show of Eastern Canada	April 5-12

SHOW DATES INDEFINITE

St. Louis, Mo.	Manufacturers' and Dealers' Association	About March 1
Bridgeport, Conn.	City Battalion	Not Decided
Harrisburg, Pa.	Motor Dealers' Association	March
Hartford, Conn.	Automobile Dealers' Association	Not Decided
Indianapolis, Ind.	Automobile Trade Association	Not Decided
Little Rock, Ark.	Automobile Dealers' Association	Not Decided
Philadelphia, Pa.	Automobile Trade Association	March
Philadelphia, Pa.	Motor Truck Association	March
Pittsburgh, Pa.	Automobile Dealers' Association	March
Utica, N. Y.	Motor Dealers' Association	March

MEETINGS

Chicago	Motor and Accessory Manufacturers' Association	Jan. 29
Chicago	National Automobile Dealers' Association	Jan. 28-29
New York	Society of Automotive Engineers	Feb. 4-6
New York	American Road Builders' Association	Feb. 25-28

RACES

Indianapolis, Ind.	500-Mile Sweepstakes	May 31